FISCAL EQUITY CHANGE IN THE FLORIDA COMMUNITY COLLEGE SYSTEM DURING THE FIRST FIVE YEARS AFTER THE IMPLEMENTATION OF PERFORMANCE FUNDING

By

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Abstract of Dissertation Presented to the Graduate School
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FISCAL EQUITY CHANGE IN THE FLORIDA COMMUNITY COLLEGE SYSTEM DURING THE FIRST FIVE YEARS AFTER THE IMPLEMENTATION OF PERFORMANCE FUNDING

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The purpose of this study was to examine the change in fiscal equity in the state of Florida's multi-institution community college system for the first five years after the implementation of performance funding and to examine how the changes were influenced by the performance funding allocations. Statistical measures recognized in public school finance were used to estimate changes in horizontal equity on Florida's funding distribution for the 28 public community colleges following the implementation of performance-based funding. The study analyzed the degree of horizontal equity of operating funds per full-time equivalent student (weighted by program cost and institution size) for the 28 public community colleges in the state of Florida for the year before and for five years after the implementation of performance-based funding.

The statistical measures were applied to operating funds with and without performance funds included. The six recognized horizontal fiscal equity criteria developed and validated for K-12 public school finance used in the analysis were range, restricted range, federal range ratio, coefficient of variation, McLoone index, and the Gini coefficient.

Two research questions were asked:

1. What were the changes in horizontal equity in the distribution of operating funds for Florida's 28 public community colleges after the implementation of performance-based funding?
2. What influence did performance-based funding have in the change in horizontal equity in the distribution of operating funds for Florida's 28 public community colleges?

Horizontal fiscal equity was examined for total state support and student fees with consideration given to major program areas by weighting the FTE. The six major program areas for which weights were applied were: Advanced and Professional, Postsecondary Vocational, Postsecondary Adult Vocational, Supplemental Vocational (Continuing Workforce Education), Preparatory, and Adult Education. Funding per FTE was calculated by dividing total funding by the full-time equivalent (FTE) student enrollment weighted by program cost.

Results of the statistical analyses were mixed, but the results seemed to indicate that equity decreased during the period, and that the performance funding allocations were less equitably distributed than other funds. The results of the statistical tests are discussed in detail in Chapters 4 and 5 of the study.

CHAPTER 1
BACKGROUND OF THE STUDY

Introduction

The importance of American community colleges to the higher education process and system is not difficult to envision. As Edmund J. Gleazer, Jr. notes in his foreword to America's Community Colleges: The First Century, there is one (community college) in almost every congressional district and they serve millions of people every year (Witt, Wattenbarger, Gollattscheck, & Suppiger, 1994, p. viii). Leslie Koltai (1983) summarizes their importance and the reasons for their success as follows:

> Community colleges have experienced significant success as well as growth over the past four and one-half decades. They provide low-cost but high-quality postsecondary opportunities for a broad array of clients, from first-generation college students to working adults and senior citizens. They are the major point of entry into higher education for America's low-income youth, underrepresented ethnic minorities, and new immigrants. They serve students of all ages who want to earn academic degrees, as well as nontraditional students seeking specific skills in nondegree programs. And, more than any other postsecondary sector, they have strong links to their communities, responding to local needs and interests in a manner and to an extent not seen in local public or private four-year colleges, proprietary schools, or research universities. (p. 100)

From the beginning, two-year colleges have been charged with a unique mission driven by America's expanding democracy. As more and more citizens graduated from public high schools following the Civil War, there was increasing pressure for more postsecondary educational opportunities. The federal government attempted to alleviate some of the pressure by funding a series of state universities through federal land grants, but these universities were far away from the small towns and farms where most Americans lived. In the decade preceding the twentieth century, developments began in response to the unmet need for accessible postsecondary education that would result in the last major link in public education—the two-year college (Witt et al., 1994).

While universities sought to remain exclusive, two-year colleges measured their success by inclusion. Open admissions with convenient college classes near their homes made higher education available to young people who could not afford to move to some distant city, and to older students who needed to work and support a family while earning their degrees. By reaching out to the average citizen, these "people's colleges" allowed a generation of Americans to achieve a goal that would have been unthinkable to their parents—a college diploma (Witt et al., 1994).

Recent changes in higher education funding threaten the ability of community colleges to continue their success as "open-door" institutions. Leslie and Fretwell (1996) recognized by 1993 that a deep economic recession and fundamental changes in state and federal support were having a serious impact on higher education (p. 4). The issue of stressed resources is not new. El-Khawas, Carter, and Ottinger (1988) found that, for the nation as a whole, current-fund expenditures per full-time equivalent student (FTE) for 2-year public institutions increased only 4.8%, in constant dollars, during the fifteen-year period from 1970-71 to 1984-85 (p. 34).

There has been continuing concern expressed in the literature for the financial crisis facing community colleges. Lombardi (1971), concerned with adequacy of funding for community colleges, wrote The Financial Crisis in the Community College. Martorana and Wattenbarger (1978) noted that community colleges have “experienced increasing financial uncertainty” due to the “pressures on public support to postsecondary education” (p. 386). Kintzer (1980), concerned with the impact of Proposition 13 on community colleges, wrote Proposition 13: Implications for Community Colleges and Lombardi (1979) indicated that “lean years” were facing community colleges in the “post-Proposition 13 era” (n.p.).

Higher education is a large, complex, and costly enterprise with approximately 40% of its support provided by public tax revenue (Honeyman & Bruhn, 1996). Steven Gold (1990), noting that higher education is the “second largest component of state budgets” and that it is “a major component of state spending,” suggested that the general fiscal condition of the state is the most important determinant of state support for higher education (p. 21). Consequently, the economic downturn of the economy experienced by the United States during the 1980s and early 1990s put significant stress on the ability of many states to finance postsecondary education.

As fiscal pressures have mounted, state legislatures have struggled to develop optimal funding methodologies, but there has been little consensus on any particular method. Criteria for judging methods have been proposed by several researchers including Martorana and Wattenbarger (1978).

Leslie and Fretwell (1996), however,

> suggest strongly that the present crisis is not merely one of resources, although it is certainly that. Perhaps more important, it is also a crisis of confidence and a crisis of values. It has become crystal clear that the public values higher education and wants it to be universally available—but the public also wants higher education to be responsive and responsible to the real needs of real people. (p. xiii)

Historically, community college funding has been noted for its shifting patterns. Different proportions have come from tuition, local taxes, and state revenues. The trend has been for the states to pick up an increasingly larger share of the total (Cohen & Brawer, 2003; Lovell & Trouth, 2002). The state's percentage of the total income to public community colleges increased from zero in 1918 to 47 percent in 1986. Contributing heavily to this trend in the late 1970s, was California's Proposition 13 which limited the property tax to one percent of the 1975-76 assessed valuation, with a maximum of a 2 percent annual increase. With one of their major sources of funds effectively capped, local community college districts suddenly found themselves forced to look to the state for additional funds. Within two years, California's state share of community college revenues increased from 42 percent to nearly 80 percent. Several other states adopted similar legislation to California's Proposition 13, with similar results (Cohen & Brawer, 2003, pp. 142-143).

There is, of course, considerable variation in support patterns among the states. For example, community colleges in Texas receive more than half of their money from the state with only 15 percent from the local district. Other states with well-developed community college systems have diverse combinations of funding sources. Illinois receives roughly one-third each from state, local, and other sources. Arizona receives one-fourth state and one-half local funding. Missouri receives slightly less than half from the state and slightly less than one-third from local sources. Community colleges in Delaware, Utah, and Washington receive more than 80 percent of their funding from the state (Cohen & Brawer, 2003). Florida community colleges received approximately 75 percent of their support from the state during the period of this study.

With increasing state support came increasing state demands for accountability. Neal (1995) noted that the "call for increased accountability began in the 1980s with discussions focusing on campus-level educational quality, undergraduate instruction, and assessment of teaching and learning" (p. 6). The assessment strategies developed in response to this movement were internally focused, institutionally developed, and largely voluntary in nature. Fundamental to the early assessment movement was the widespread belief that no single assessment model was appropriate for every type of institution. Accordingly, it was considered inappropriate to compare assessment results between institutions. The concept of assessment became popular as an internal strategy to address public concerns about educational quality. By 1990, forty states were actively promoting assessment (Ewell et al., 1990).

The 1980s accountability measures gave way in the 1990s to performance indicators. Ewell (1994a) notes that

> this decentralized improvement-oriented approach depended decisively on two conditions. First, institutions had to implement credible local assessment programs promptly. By 1990, it was all too clear that institutional response was both lagging and uneven.

> Second, institutions had to find an effective way to communicate the results of assessment to outside audiences. Institution-centered reports were rich but diffuse, although they rarely allowed policymakers the opportunity to compare institutions or to examine overall system performance. (pp. 148-149)

These two drawbacks noted by Ewell became increasingly important during the difficult funding conditions of the early 1990s. The economic downturn led to the paradox that neither states nor institutions could continue to afford assessment as an add-on, yet there was a simultaneous reemergence of traditional public concerns about higher education's efficiency. The concerns centered on issues such as faculty workloads, program duplication, and investments in undergraduate teaching.

For these reasons, Ewell observes that the conversation accompanying the recent emergence of performance indicators differs considerably from its counterpart of the 1980s.

> For one thing, current debate has a considerably wider domain. While the emergence of state interest in assessment in the early 1980s signalled a new concern with quality as opposed to more traditional issues of access and efficiency, current initiatives embrace both. At the same time, a new "quality rhetoric" is apparent in the labels attached to many of these initiatives—*Priorities, Quality, and Productivity* (PQP) in Illinois or *Academic Quality Program* (AQP) in Wisconsin, for instance—a vernacular that strongly reflects the growing influence of Total Quality Management concepts drawn from business and industry. (Ewell, 1994b, p. 149)

States are consciously attempting to include a mix of old and new elements as they develop performance indicators. Although many of the indicators reflect traditional concerns about efficiency, others

> reflect an enlarging concern with explicit educational processes and delivery.
>
> The inclusion of such domains suggests a new willingness to examine the actual production function of higher education. If this trend continues, and if it is more deliberately linked to planning and resource allocation as many states suggest, the result may be an unprecedented level of policy engagement in managing instructional delivery. (Ewell, 1994b p. 149)

Statement of the Problem

> Patterns of finance are inextricably connected with institutional missions and the prevailing teaching-learning paradigms in American higher education. It is difficult to contemplate radical changes in patterns of finance that do not either arise from, or cause, profound changes in the substance of the higher educational enterprise. (Johnstone, 1998, p. 248)

Accordingly, when adjusting funding methodologies for higher education in response to public concerns, policymakers must be careful not to make changes that will unintentionally have an adverse impact on other important public policies related to the "substance of the higher educational enterprise."

Per-student fiscal equity has been generally accepted as one of the goals for funding community colleges (Breneman & Nelson, 1981; Kerr, 1980; McKeown, 1986; Nelson, 1982; Wattenbarger & Mercer, 1988). The ability to measure, contrast, trend, and compare the per-student allocation/expenditure of funds (student funding equity) was required by legislative bodies and the public in state systems of community colleges where the commonality of institutional mission and funding was the state goal.

The state of Florida is not an exception. Policymakers and the general public continually attempt to compare the per-student cost of community colleges with other community colleges, universities, and public K-12 school districts that offer similar programs. The Florida State Board of Community Colleges (2000, p. 5), the Florida Postsecondary Education Planning Commission (Jones & Brinkman, 1990, p. A-12), and the Florida Legislature (Postsecondary Education Planning Commission, 1986, p. 1) have all indicated that equitable funding is a state policy goal.

The state of Florida has also been experimenting with performance funding for several years. The 1994 Legislature created the Performance Based Incentive Program as a means to improve vocational education and make the programs more market driven. Only a small amount of state funding was devoted to the initiative. The majority of the funding was from federal sources. This particular program has now been discontinued, but the success of the program led to other performance initiatives. In 1996, the Legislature initiated the Performance Based Budgeting (PB^2) initiative for all of the community college degree and certificate programs. In 1997, the Legislature created the Workforce Development Fund with the intention of funding 15 percent of the total based upon performance measures.

None of these performance funding initiatives were designed with equity in mind, which begs the question: How does performance funding in the Florida Community College System affect the horizontal funding equity of the system?

Purpose of the Study

The purpose of this study was to examine the change in fiscal equity in Florida's multi-institution community college system during the first five years after the implementation of performance funding and to determine the influence performance-based funding had in the change in horizontal equity .

This study utilized data from the distribution of general operating funds to Florida's community colleges for the fiscal years 1995-96 through 2000-01. Statistical measures recognized in public school finance were used to estimate changes in horizontal equity on Florida's funding distribution for the 28 public community colleges for five years after the implementation of performance-based funding. The following questions were asked:

1. What were the changes in horizontal equity in the distribution of operating funds for Florida's 28 public community colleges after the implementation of performance-based funding?
2. What influence did performance-based funding have in the change in horizontal equity in the distribution of operating funds for Florida's 28 public community colleges?

Overview of the Methodology

This study focused on the horizontal fiscal equity in the distribution of operating funds for Florida's 28 public community colleges over a 6-year period. This study included the application of recognized horizontal fiscal equity criteria used in evaluating K-12 horizontal fiscal equity. These criteria have recently been used to evaluate community college per-student fiscal equity with some success (Brown, 1999; Harrell, 1992).

This study was designed to be non-experimental. Population data, obtained from the Florida Department of Education, Division of Community Colleges, were used for analysis. Statistical measurements for equity studies developed for public schools and recently applied to community colleges were used by the researcher to analyze the degree of horizontal equity on revenue distributions per full-time equivalent (FTE) student to the 28 public community colleges in Florida for six fiscal years beginning with 1995-96. The 1995-96 fiscal year was used as the beginning year of this study because it was the last year prior to the implementation of performance-based funding. The statistical measurements for equity were applied to operating funds revenue distributions to the colleges with performance funds included and with performance funds separate so that the influence on equity of the performance funding could be evaluated.

Horizontal fiscal equity was examined for total state support and student fees with consideration given to major program areas by weighting the FTE. The seven major program areas for which weights were applied were Advanced and Professional, Postsecondary Vocational, Postsecondary Adult Vocational, Supplemental Vocational (Continuing Workforce Education), College Preparatory, Vocational Preparatory, and Adult Education. Funding per FTE was calculated by dividing total funding by the full-time equivalent (FTE) student enrollment weighted by program cost. The range, restricted range, federal range ratio, coefficient of variation, Gini coefficient, and McLoone index were calculated for the funding per FTE for each institution for each year included in the study to analyze the degree of horizontal equity as described by Berne and Stiefel (1984) and Thompson, Wood, and Honeyman (1994). The Lorenze curve was plotted to represent the Gini coefficient for each set of data. The calculations were examined, analyzed, and compared.

Limitations and Delimitations of the Study

This study was limited to the 28-institution Florida Community College System. This study was limited to the equity concept of horizontal equity. The data were limited to the data for the 6 fiscal years from 1995-96 to 2000-01. The focus was on a multi-institution public community college system that had a stated goal of “a common academic mission, common funding objective, and common funding methodology for all institutions within the community college system” (Harrell, 1992, p.11).

Neither public/private community colleges of other states, private community colleges in Florida, nor public/private universities of any state were considered. Accordingly, the results cannot be generalized to any other state.

The study was limited to state funds and student fee revenue for general operating purposes. For reasons to be explained in more detail in Chapter 3, the study did not examine other local revenue. It also did not consider capital outlay funding from the Capital Outlay & Debt Service Trust Fund or the Public Education Capital Outlay Trust Fund.

The study was limited to the six disparity measures developed for public school education and limited to the theory of horizontal equity. The variable was limited to appropriated funding per FTE. Questions related to the adequacy of funding were not addressed. The concept of vertical equity was addressed only to the extent that different weights were used for funding the different programs in recognition of the fact that some programs have higher costs and should consequently be funded at a higher level in order to be equitable.

Definition of Terms

The following definitions are intended for clarification and precision in interpreting this study. As such, they may apply only for the purpose of this study.

State Support

Community colleges in Florida received operating funds from the state from four major appropriations categories during the period analyzed: Community College Program Fund (CCPF) - General Revenue, CCPF - Lottery, Performance Based Budgeting (PBB), and the Workforce Development Education Fund (WDEF). State support for the purpose of this study is the combination of all four.

Operating Funds

In addition to funds received from the state, community colleges in Florida collect fee revenue from students at the local level. The combination of state support with fee revenue is considered total operating funds for the purpose of this study.

Full-time Equivalent (FTE) Enrollment

Students in Florida community colleges are predominately part time. In order to compare funding per student, it was assumed that a normal full time load for a student would be 30 semester credit hours per year. Accordingly, total semester credit hours enrolled for each institution was divided by 30 to determine the institution's full-time equivalent (FTE) enrollment.

Horizontal Equity

Horizontal equity has been defined as simply as "equal treatment of equals" (Jones, 1985, p.56). However the term can be used to refer to equal tax burdens for taxpayers with equal ability to pay or it can mean that students who are alike should receive equal shares of funding. The latter concept is the one used for this study (Berne & Stiefel, 1984; Brown, 1999; Harrell, 1992; Jones & Salmon, 1985).

Significance of the Study

The importance of public community colleges to the education system in the United States is well documented in the literature. The

> numbers alone are impressive. Today, there are approximately 1,472 public community colleges, technical colleges, two-year branch colleges, and independent junior colleges in America. Of these, almost 1,300 are public institutions. These colleges enroll more than 5.7 million students in credit courses, well over five million of these students in public colleges. Millions of others are served through noncredit courses, activities, and programs. More than 50 percent of all first-time college students in the United States attend a community college, and more than 45 percent of all minority students enrolled in higher education in America attend a community college. Many would never have attended college if the community college, with its commitment to open-access admissions, did not exist. In addition to offering credit and noncredit courses, most community colleges serve as cultural, social, and intellectual hubs in their communities (Vaughan, 1995)

The total national budget for community colleges exceeded $18 billion in 1995 (Campbell, Leverty, & Sayles, 1996), and “community colleges are going to play the major role in training the workforce of the next century” (Bill Gates).

This study will provide a framework for state legislators and other policymakers to evaluate the impact of performance funding decisions upon the horizontal equity of the distribution of operating funds to Florida’s 28 public community colleges. Although the results of the study cannot be generalized to any other state, the concepts and framework are readily transferable for use by other state policymakers.

Overview of the Study

A literature review was conducted to find research on disparity issues. An abundance of research was found concerning public schools (preK-12 education), but very little was found concerning community colleges. Three researchers, Harrell (1992) and Brown (1999) from the University of Florida and Loftus (1983) from Illinois State University, focused on horizontal equity for community colleges. Their research along with similarities in preK-12 studies provided the structure for this study that uses the disparity measurements described by Berne and Stiefel (1984) and Thompson et al. (1994). Brown was particularly relevant to this study because she also studied the Florida Community College System and also considered the impact of performance funding. This study extends Brown's (1999) research on the applicability of disparity measures used in public schools for community colleges. It also expands the approach to include consideration of the varying costs by program and the institution's program mix. While the Brown study evaluated only total funding per unweighted FTE, this study considers equity by major program area by weighting the FTE according to cost. The Brown study was also limited to consideration of only the impact of the first year (1996-97) of performance funding because of the timing of the study, while this study examines the change in equity over the first five years after the implementation of performance funding.

The study was designed to be non-experimental using population data provided by Florida's Department of Education, Division of Community Colleges. Raw data included student fees, lottery proceeds, general revenue funds, and actual FTE (full-time equivalent enrollment) for each of the 28 community colleges for the six years specified. Using disparity measurements as noted in Harrell's (1992) and Brown's (1999) community college study and those for preK-12 education, the degree of equity was calculated for each funding distribution for the six years specified. The calculations were examined and analyzed.

Organization of-the Study

This study has five chapters. The first chapter is the introduction. The second chapter contains the literature review including the concepts and principles of equity and how the degree of equity is generally determined. Chapter 2 also includes research on educational funding methodologies in general; community college funding methodologies in particular; and the specific funding methodologies used for the state of Florida for the fiscal years 1995-96 through 2000-01. The research methodology used for this study is described in Chapter 3. Chapter 4 contains the analysis of the data for this study, and Chapter 5 contains the conclusions. The appendix containing the raw data for the study follows Chapter 5.

CHAPTER 2
LITERATURE REVIEW

Introduction

This chapter contains the results of the literature review for the study. The research focused on performance funding methodologies in multi-institution community college systems and on the principle of equitable funding distribution in multi-institution community college systems. The research on performance funding methodologies considered performance funding in general, but primarily focused on multi-institution community college systems, especially those methodologies used for Florida community colleges. Most of the equitable funding research that was found related to preK-12 education; however, the concepts and principles were found to be applicable to community colleges. Much of the research was concerned with the statistical measurements used to analyze the degree of equity in a funding program. Studies were examined to identify which principles of equity were considered, how the principles were measured, and what variables were used in the assessment.

The results of the literature review are arranged in this chapter by topics that progress from the most general concepts to those most specifically related to Florida community colleges. A discussion of performance funding culminating with Florida is followed by a discussion of equity funding that progresses from the most general concepts to the ones most relevant to the Florida Community College System.

The Concept of Performance

Performance is defined as "the execution of an action, something accomplished" and as "the fulfillment of a claim, promise, or request" (Merriam-Webster's Collegiate Dictionary, 2001). When coupled with finance, the concept relates to tying an organization's funding to its accomplishments. This is not a difficult task in the private sector. Businesses have always been evaluated based upon their profit margin or "bottom line." In the public sector, however, there is no "bottom line." Policymakers have struggled for the last half-century to develop methodologies to connect funding with performance (Campbell et al., 1996; Gaither, Nedwek, & Neal, 1994; OPPAGA, 1997; Serban, 1998a, 1998b)

Performance Funding in Government

One of the earliest initiatives for federal budget reform came from the 1949 Hoover Commission on the Organization of the Executive Branch. The Commission recommended a shift toward "program budgeting"—a budget based upon functions, activities, and projects rather than objects of expenditure, such as salaries and operating capital outlay. Even though laws were passed requiring the implementation of program budgeting, the budgeting process continued to be largely based upon workload measures because of the availability of data (OPPAGA, 1997).

In 1961 the Defense Department piloted a planning-programming-budgeting system (PPBS) that was expanded to civilian federal agencies by 1965, and later became the budgeting model for many states. PPBS was developed to connect planning with budgeting by identifying goals, objectives, and costs for several years into the future. It was supposed to provide decisionmakers with information on the efficiencies and effectiveness of alternative approaches to achieving objectives. By 1971, however, a new administration shifted the focus from the planning orientation of PPBS to more short-term management methodologies adapted from the private sector (OPPAGA, 1997).

The federal government piloted a Management by Objectives (MBO) approach in 21 federal agencies in 1973. MBO was productivity-focused rather than results-focused. Managers set targets for program objectives, established annual operating plans, and tracked progress toward these goals. Managers were expected to discuss employees' goal accomplishments with them during the year and suggest ways to improve performance, but the performance was not linked to the budget (OPPAGA, 1997).

Another budget reform effort, initiated in the 1970s in the state of Georgia, was zero-based budgeting (ZBB). ZBB was attempted by at least 11 other states and the federal government by 1977. Unlike PBBS and MBO, ZBB did not focus on planning or performance. It was a tool to build budgets by examining all program spending annually and presenting funding decision packages ranked on the costs and benefits of each (OPPAGA, 1997; Serban, 1998a).

> While these reform efforts have had some effect on the government budgeting process, all failed to be sustained for several reasons. First, the information requirements of these systems were extensive but were not supported by adequate historical record-keeping, sufficient staff expertise, or sufficient computer support for the type of analysis required. Typically, these systems collapsed under paperwork. Second, requiring all programs to justify their existence under a system like zero-based budgeting was a laborious exercise that was not feasible on a regular basis and did not appear to produce substantial resource reallocation. Third, by stressing "rational" analysis, these systems did not acknowledge the political choices inherent in budgeting and so tended to have little impact on

> funding decisions. Finally, prior reform efforts have often not had the strong and consistent backing from both the executive and legislative branches needed to succeed. (OPPAGA, 1997, p. 5)

During the 1990s governments have attempted to move from regulatory management to results-oriented management. "Performance budgeting, which considers the results achieved as well as the resource needs of government programs, is now in vogue at the federal, state, and local levels" (Burke & Serban, 1997b, p. 1). The U.S. Government Performance and Results Act of 1993 requires all federal agencies to submit strategic and annual performance plans to the Office of Management and Budget for all of their programs. The goal is to tie funding to performance. The National Association of State Budget Officers estimated that one-fourth of all states gave some consideration to performance in the budgeting process for all or some of their agencies in 1996 (Burke & Serban, 1997b). By 2001, seventy-two percent of the states linked performance to the budgeting process for higher education (Burke & Minassians, 2001).

The Concept of Performance in Higher Education

The implementation of performance in budgeting for higher education was not far behind its implementation in other government sectors. Indeed,

> (p)ublic higher education may be leading this move toward funding for results at the state level. Performance funding or budgeting, once unthinkable for state campuses, is now becoming fashionable in state capitols. Competition for limited resources with health care, welfare, corrections and K-12 education and complaints about poor performance are pushing states to consider campus performance on public priorities in their funding of public colleges and universities. (Burke & Serban, 1997b, p.1)

States have traditionally funded campuses based on current costs, inflationary increases, and projected enrollment changes (Campbell et al., 1996). Burke & Serban maintain that such input factors “reflect what institutions require in tax support rather than what states desire from public higher education” (Burke & Serban, 1997b, p.1). Input-based budgeting ignores outputs (e.g. graduates) and outcomes (e.g. quality of graduates or the research and services provided).

Tennessee

Although performance funding for public higher education became popular in the 1990s, it did not begin there. The Tennessee Higher Education Commission (THEC) initiated a pilot effort in 1974 “to explore the feasibility of allocating some portion of state funds on a performance criterion” (Morrison, 1995, p. 3). The effort, sponsored by grant money, was called the Performance Funding Project. The pilot project lasted five years, with two additional pilot funding years (Albright, 1996; Burke & Serban, 1998c).

The project was undertaken in response to several factors. First, the 1972 legislature initiated a version of program budgeting that required state agencies to set goals, rank agency priorities, and evaluate program effectiveness as part of their budget requests. Second, two of the three governors elected between 1970 and 1978 were Republicans interested in efficiency and accountability. Third, the legislature expressed discontent with formula budgeting for public higher education. The THEC wanted campuses to have a way to justify the money requested from the legislature, and performance funding appeared to have the potential of gaining the support of the governor and the legislature (Burke & Serban, 1998c).

During the pilot years, the THEC consulted extensively with campuses, systems, governing boards, and a national advisory panel. Institutions participating in the project were asked to develop their own sets of performance indicators, to acquire initial performance data, and to explore how performance on indicators might be rewarded through the appropriation process. The proposed performance-funding model was approved by the governor for the 1980-81 appropriations cycle based on institutional performance in 1978-79.

The pilot phase carried the system through 1982. It was followed by four five-year cycles, 1982-87, 1987-92, 1992-97, and 1997-2002 (the current cycle). Performance funding, implemented during the last two years of the pilot phase, was earned based on performance on five variables. The variables concentrated exclusively on instruction. They were: (1) program accreditation, (2) ACT COMP or GRE test scores of graduating seniors, (3) scores of graduating seniors on an external test in their major, (4) student and alumni satisfaction surveys, and (5) campus-wide plans for instructional improvement. Institutions were able to earn an additional 2 percent of appropriations based on their performance (Banta, Rudolph, Dyke, & Fisher, 1996, p. 23).

The 1979 state performance standards in Tennessee were based on obtaining accreditation for programs, results on standardized exit exams for a graduate's major and general education courses, survey results on the satisfaction of students/graduates/employees with academic programs, and results of program peer reviews. Two percent of the state's "instructional component of its education and general budget" (Banta et al., 1996, p. 23) was earned by the college as a supplement.

Performance-based funding allocation in Tennessee grew from 2% of the total instructional budget in 1979 for five performance indicators (Ewell, 1994c) to 5.5% for ten performance indicators by the year 1990 (Banta et al., 1996; Bogue & Saunders, 1992; Meisinger, 1994). In addition to the original five performance standards the following criteria were added: improvement actions taken to remedy identified weaknesses, transfer program reviews or placement in the job market, enrollment goals for campus-specific groups, graduation rates, and mission-specific objectives (Banta et al., 1996, p. 25). Up to ten points were awarded for performance for each indicator. A total of 100 points for the 10 indicators resulted in an additional 5.45% of the institution's state appropriation.

The community college system in Tennessee faired well through Tennessee's use of performance-based funding. The 14 community colleges received approximately $100 million in additional funding as a result of the performance-based funding policy by 1994 (Mayes, 1995).

During the first five-year cycle after the pilot, the performance-funding supplement was increased to 5 percent. Performance indicators remained essentially the same. There were two notable modifications: (1) the GRE option was eliminated and (2) two-year institutions had the option of reporting job-placement rates of their graduates instead of their ACT COMP scores.

The second five-year cycle maintained the 5 percent performance-funding supplement as well as most of the indicators used in the previous cycle.

Modifications to the indicators included the elimination of the student surveys and the addition of peer review of Master's programs for four-year institutions.

"The measures used during the first two five-year cycles focused exclusively on teaching and learning issues, without any concern for efficiency, productivity, or the relationship between performance funding and institutional or statewide planning goals" (Burke & Serban, 1998c, p. 46). However, in 1990, the THEC made it clear that while institutional improvement was the main goal of performance funding, accountability was also an important goal. The THEC adopted the following statement of purpose for its performance-funding program:

> "The Performance Funding Program is designed to stimulate instructional improvement and student learning as institutions carry out their representative missions. Performance Funding is an incentive for meritorious institutional performance and provides the citizens of Tennessee, the Executive Branch of state government, the legislature, education officials, and faculty with a means of assessing the progress of publicly funded higher education. By encouraging instructional excellence, the Performance Funding Program contributes to continuing public support of higher education and complements academic planning, program improvement and student learning." (Tennessee Higher Education Commission, 1993, p. ii)

The indicators for the third five-year cycle (1992-97) began to reflect the emphasis on accountability as an additional goal. Two accountability indicators were added: (1) minority enrollment compared with institutionally set benchmarks, and (2) student retention and graduation rates. In addition, all institutions had to undergo peer review of their non-accreditable undergraduate programs, and four-year institutions were required to continue peer review of Master's programs. Student satisfaction surveys were reinstated. There was a total of ten performance indicators. All indicators were equally weighted and the funding supplement was increased to 5.45 percent of appropriations.

The 5.45 percent performance-funding supplement is retained in the current cycle. Minority enrollment has been eliminated as an indicator. Two new indicators have been added that reward institutions for progress toward their own planning goals and their relationship with statewide planning: (1) institutional planning goals and (2) state strategic master plan goals. Burke and Serban see the addition of these indicators as a reflection of the THEC's desire to create a direct connection between performance funding and state and institutional planning. They further see the addition of another measure (pilot evaluations of other general education outcome measures) as a reflection of their dissatisfaction with heavy reliance on standardized tests. The allocation methodology is not competitive. Institutions are measured against their past performance. Based on the indicators and benchmarks selected, institutional performance has improved over time and overall funding for higher education has increased (Burke & Serban, 1998c).

Since Tennessee's experiment and success with performance-based funding, a number of other states followed suit. Eight of the ten states that reported using performance-based funding in 1994 adopted such policies in the 1990s (Burke & Serban, 1997b). Colorado and Missouri reported implementation in 1994, Arkansas in 1995, and Ohio in 1996. The most recent states added to the list of performance-based funding states were Florida and Kentucky in 1996, and, of course South Carolina, with its 100% allocation, in 1998 (Christal, 1998, p. 9).

Other States

Implementation of performance funding for public higher education expanded rapidly in the first half of the 1990s. A survey of State Higher Education Finance Officers by Caruthers and Layzell in late 1994 found that nine states were linking some funding for public colleges and universities to their achievements on priority goals or objectives. Ten other states were considering linking some funding for public colleges and universities to achievement. The following year, Sandra Ruppert conducted telephone interviews with the chairs of the higher education committees of state legislatures and found that forty-four percent of the respondents from forty-nine states thought their states were likely to link funding to student or institutional performance in the next few years. Two surveys in 1996, one by Mary McKeown and one by the Maryland Higher Education Commission, suggested a growing interest in funding for results. In the McKeown survey, fourteen states indicated that they used quality outcomes factors in budgeting for public higher education. The Maryland survey concluded that "many states are either beginning to use or are considering performance funding, which is a natural outgrowth of the current public demand for the most effective use of tax dollars" (Burke & Serban, 1997a, p. 1).

By 1997, the popularity of performance funding was undeniable, but its image was tarnished in several states where its implementation had been hindered by practical and political problems. There was also some confusion about what was meant by performance funding and performance budgeting. The

Rockefeller Institute of Government decided to conduct a survey to determine the current status and the future prospects of performance funding and performance budgeting for public higher education. For purposes of the survey, the Institute defined performance funding as "special state funding tied directly to the achievements of public colleges and universities on specific performance indicators" (Burke & Serban, 1997a, p. 1). Performance budgeting was defined as "state governments considering reports of achievements on performance indicators as a factor in setting budget levels for public higher education and its institutions, without tying designated amounts directly to performance on specific indicators" (Burke & Serban, 1997a, p.1). With performance funding, the link to resources is direct, clear, and fixed. With performance budgeting, the link is indirect, ambiguous, and flexible (Harbour, 2002).

The survey was conducted by telephone and responses were received from the State Higher Education Finance Officers (SHEFOs) or alternate officials in all of the fifty states, Puerto Rico, and the District of Columbia. The survey found ten states with performance funding and eight with performance budgeting. Florida was the only state that appeared on both lists. Of the ten states with performance funding, eight adopted the program during the 1990s. Tennessee formally adopted their program in 1979 and Connecticut adopted theirs in 1985. The other eight states were: Colorado, Florida, Kentucky, Minnesota, Missouri, Ohio, South Carolina, and Washington.

The eight states with performance budgeting were Alabama, Florida, Hawaii, Idaho, Kansas, Nebraska, Rhode Island, and Texas. Only Hawaii had adopted its program before the 1990s. Its program was adopted in 1975. At least 75 percent of the respondents in both categories indicated that they were likely to continue with their programs. About 40 percent of the states without performance funding or performance budgeting programs indicated that they were likely to implement them in the next five years (Burke & Serban, 1997a).

The Rockefeller Institute repeated the survey the following year and found that confusion over the term "performance budgeting" had resulted in inaccurate responses to the 1997 survey (Burke & Serban, 1998b, p. 1). In conducting the 1998 survey, it became apparent that respondents to the 1997 study were not clear on the meaning of performance budgeting. The 1998 survey included six questions to identify the operational details and the actual impact of performance budgeting. These questions were added to determine the extent to which performance reports were used in budget preparation with the governor and legislature, in the executive budget, and in the appropriations act and related documents. A final question asked the respondents from states with performance budgeting to assess the actual effect of the program on the funding of public colleges and universities in their state.

Given the new responses to the 1998 survey, the Institute found that it should have listed nine more states as having performance budgeting and that one of the states listed as having a performance budgeting program did not have one. The correct number of states having performance budgeting in 1997 was sixteen instead of eight states. The sixteen states were: Colorado, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Mississippi, Nebraska, North Carolina, Oklahoma, Rhode Island, Texas, and West Virginia. The 1998 survey found that these sixteen states continued to use performance budgeting and that, in addition, the states of Louisiana, Maine, Oregon, South Dakota, and Washington had adopted such programs.

Of the ten states that reported performance funding in 1997, two had discontinued their programs (Kentucky and Minnesota). However, five states had adopted performance funding programs for 1998, so the total grew to thirteen: Colorado, Connecticut, Florida, Illinois, Indiana, Louisiana, Missouri, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, and Washington.

The Rockefeller Institute has continued the survey on an annual basis. By 2001, thirty-six states had either performance funding or performance budgeting. Ten states had both (Burke & Minassians, 2001).

Performance Budgeting

As noted earlier, the 1997 Rockefeller Institute survey defined performance budgeting as “state governments considering reports of achievements on performance indicators as a factor in setting budget levels for public higher education and its institutions, without tying designated amounts directly to performance on specific indicators” (Burke & Serban, 1997a, p. 1). The 1998 survey further defined it as “state governments use indirectly reports of system or institutional achievements on performance indicators as a context in shaping the total budget for public higher education and/or its institutions (indirect influence on budget levels)” (Burke & Serban, 1998d, 16). Responses to the 1998 survey indicated that the legislature had mandated performance budgeting in twelve of the twenty-one states that had programs. Coordinating boards had implemented performance budgeting in the other nine states without legislation. One state (Texas) had the performance indicators prescribed in statute—a fact noticeably different from performance funding. Indicators were prescribed in statute for five of the thirteen states with performance funding.

Although performance budgeting was mandated in twelve of the twenty-one states reporting programs in the 1998 survey, the trend seems to be away from mandate. Of the five programs adopted between the 1997 and 1998 surveys, the program was legislatively mandated in only two, and none of them had statutorily prescribed indicators. Burke and Serban observe that this trend follows the movement toward deregulation and decentralization in state government and that performance budgeting is clearly "moving away from mandate and prescription" (Burke & Serban, 1998d, p. 5).

In almost half of the states reporting performance budgeting, the program for public colleges and universities was part of a general program for state agencies reflecting the growth of performance budgeting in state government noted by the National Association of State Budget Officers. On the other hand, eleven of the twenty-one states with performance budgeting reported programs only for public higher education. This statistic would indicate that state policymakers have a particular interest in linking budgeting with performance for public colleges and universities. This particular interest is supported by the growing requirement of performance reports on efficiency and effectiveness in public higher education. Thirteen of the twenty-one states with performance budgeting for public colleges and universities reported the requirement for published reports of their performance on a range of designated indicators. Burke and Serban found it surprising that only thirteen reported the requirement for performance reporting, since both performance budgeting and performance reporting require the designation of performance indicators and the documentation of institutional achievements (Burke & Serban, 1998d, p. 5).

The 1998 survey results also indicate that the combination of performance budgeting with performance funding may represent an emerging trend. Eight of the twenty-one states with performance budgeting also have performance funding. More significantly, all five states that adopted performance funding between 1997 and 1998 surveys were states that had performance budgeting. Three of them (Illinois, Indiana, and Oklahoma) had performance budgeting in 1997, and the other two (Louisiana and South Dakota) adopted performance budgeting simultaneously with performance funding. It is possible that some policymakers see performance budgeting as a step toward performance funding. In Florida, as will be discussed in more detail later, the legislature adopted performance funding for public higher education after legislation was passed requiring performance budgeting for all state agencies.

Responses to the 1998 survey indicate that performance budgeting is more stable than performance funding. All of the states that reported performance budgeting in 1997 reported continuing it in 1998. This differed from the performance funding responses where two out of ten had discontinued their programs. The answers from respondents on the likelihood of continuing performance budgeting also showed stability. Twenty of the twenty-one respondents indicated that they were “likely” or “highly likely” to continue their programs. Only Georgia could not predict its future, and that was because the governor who championed the program was leaving office.

Burke and Serban concluded that performance budgeting has become the preferred method of

> linking campus budgets to institutional performance. Undoubtedly, its loose link to resources is less controversial to campuses than performance funding. It is also more acceptable to legislators. Performance funding, with its automatic tie to performance, lessens their control over the funding of public campuses, including those in their home districts. (Burke & Serban, 1998d p. 6)

Survey responses indicated that performance budgeting is attractive as well as stable. Although 42 percent (21/50) of the states already had the program, four more considered it “highly likely” and seven more considered it “likely” that they would adopt performance budgeting in the next five years. Only six respondents considered its implementation “unlikely” and none answered “highly unlikely.” If the predictions on continuation and adoption are correct, nearly two-thirds of the states would have performance budgeting by 2003. Burke and Serban concluded that, whatever the final number, the stability and attractiveness of performance budgeting suggests more states will have performance budgeting in the future. “It is clearly the least controversial process for linking state budgets to institutional performance. This lack of controversy probably explains why it has become the preferred approach to this linkage” (Burke & Serban, 1998d, p. 6).

As noted earlier, the 1998 survey included six additional questions to clarify the link of performance budgeting to the budget process and its actual effect on funding. Respondents from states with recently adopted programs—with procedures not implemented or fixed—were asked to answer the questions based on the intent of the legislation or policy. Thirteen of the twenty-one programs submit reports on the performance of colleges and universities to the governor's budget office and fourteen send them to legislative committees as part of the budget preparation process. In seventeen of the states, higher education officials discuss these reports with executive officials and seventeen discuss the reports with legislators in budget hearings. Slightly more than half (11/21) of the executive budgets in states with performance budgeting normally refer to the performance indicators or the performance reports while 43 percent (9/21) of the appropriation acts or related budget documents normally refer to the indicators or the reports.

The final question in the 1998 survey asked the respondents to estimate the "actual effect of institutional performance on the budgets of public colleges and universities" (Burke & Serban, 1998d, p. 19). The survey offered five answer choices: large effect, moderate effect, little effect, no effect, or can not determine the effect. The responses were: large effect - 2, moderate effect - 5, little effect - 5, no effect - 1, and can not determine the effect - 8.

> Burke and Serban liken the assessment of the survey results to
>
> seeing the glass as half full or half empty. The cynic could say that the closer the process comes to funding the looser the link becomes. The percentage of programs that allows a positive response does decline when the process moves from budget preparation, to appropriations act to funding results. But this glib conclusion would give a false impression. It seems significant that a large majority of the programs builds performance into the budget preparation process. It is also impressive that a majority of the

> executive budgets refer to the performance indicators and reports. Although the references to indicators and reports in the appropriations acts do fall below a majority, it is not far below fifty percent. Finally, a third of the SHEFOs say their performance budgeting programs have a large or moderate effect on the funding of public higher education. This percent is even more surprising, since the programs in six states were too new to predict the effect. Frankly, the responses reveal a closer link during the process stage and even the funding phase than we would have anticipated. (Burke & Serban, 1998d, p. 7)

In any case, the survey responses indicated that performance budgeting would only become more dominant for public higher education in the future. Indeed, by 2001, fifty-four percent of the states had performance budgeting for higher education (Burke & Minassians, 2001).

Performance Funding

As noted earlier, the 1997 Rockefeller Institute survey defined performance funding as "special state funding tied directly to the achievements of public colleges and universities on specific performance indicators" (Burke & Serban, 1997a, p. 1). The 1998 survey added parenthetically that money was awarded after the performance was achieved. The 1998 survey results reflected growth for performance funding just as it did for performance budgeting, but performance funding demonstrated less stability than performance budgeting. The April 1997 survey listed ten states, or 20 percent with performance funding. In 1998, there were thirteen—a six percent increase for the year. The change was deceptive, however, because two states (Kentucky and Minnesota) had discontinued their performance funding programs and five had adopted programs (Illinois, Indiana, Louisiana, Oklahoma, and South Dakota). These changes tend to support the conclusion of the 1997 survey that "the desirability of performance funding, in theory, is matched by its difficulty in practice" (Burke & Serban, 1997b, p. 5).

Despite the relative lack of stability compared with performance budgeting, the respondents indicated that all of the states with performance funding, except Colorado, would continue their programs. Eight of the thirteen states considered its continuance "highly likely" and four considered it "likely." In the 1997 survey, only three of ten respondents thought continuance of performance funding was "highly likely."

Predictions about the likelihood of future adoptions of performance funding were more divided than with performance budgeting. Respondents considered the initiation of performance funding during the next five years "highly likely" in only four states and "likely" in eight. Five states responded that performance funding implementation during the next five years was "highly unlikely" and nine responded that it was "unlikely." Respondents in ten states could not predict the prospects of performance funding. Burke and Serban reported that SHEFO perceptions of the problems in South Carolina apparently colored some of their attitudes on performance funding. Several SHEFOs in states with, or considering, performance funding indicated that their programs had, or would have, fewer indicators and would allocate smaller percentages of appropriations than South Carolina's. South Carolina's program had 37 indicators and allocated 100 percent of its higher education budget based of upon its performance funding program. Some of the SHEFOs in states responding that they were "unlikely" to adopt performance funding also mentioned the South Carolina situation as a reason for avoiding the program.

Notwithstanding the sharp division in attitudes toward the future adoption of performance funding, if the respondent's predictions come true, almost half of the states could have such programs by 2003. Given the instability of this performance funding between survey years, the predictions may not be as reliable as those for performance budgeting, but performance funding is still likely to be a force in higher education for the near future.

Burke and Serban observe that performance funding has received much more national attention than performance budgeting. Little has been written about performance budgeting as defined by the Rockefeller Institute survey even though Hawaii's and Illinois' programs were adopted prior to 1985 and Indiana's and Washington's programs were adopted in 1988. Performance funding programs are newer. Tennessee's program was adopted in 1979 and a small program in Connecticut was adopted in 1985. Outside of these states mentioned, all programs in performance budgeting and performance funding were adopted since 1990. Burke and Serban suggest that the reasons most of the attention has been given to performance funding stem partly from the publicity given to the controversial mandates in South Carolina. They also suggest that the tight tie to funding in performance funding as opposed to the loose link in performance budgeting contributes to the differences in notoriety. "Performance funding presents an immediate and automatic threat to campus budgets, while the impact of performance budgeting is more remote and obscure" (Burke & Serban, 1998b, p. 11).

Burke and Serban observed that the controversy created by South Carolina's mandate of 100 percent funding based upon 37 prescribed indicators has not ended the growth in performance funding, but it has possibly encouraged a more cautious approach. States seem to be more aware of the problems and budget instability inherent with hasty implementation and/or too many indicators. New programs seemed geared toward targeted change as opposed to radical reform. Of the five programs adopted between the 1997 and 1998 surveys, only Louisiana's was mandated by the legislature and none of the programs had statutorily prescribed indicators. In contrast to these new programs, eight of the ten states listed in 1997 had their programs mandated, and five had indicators statutorily prescribed. Of the ten programs having performance funding in the 1997 survey, legislators and/or governors initiated six, coordinating boards initiated three and one was initiated by a combination of all three groups. In the five programs started between the surveys, two were initiated by coordinating agencies, one by the legislature, one by a combination, and one by a special community college task force (Burke & Serban, 1998b).

These findings suggested that performance funding might be moving away from mandates and prescriptions from state governments toward more flexible and limited programs initiated by coordinating agencies with campus participation and the results of the 2001 Survey continue that suggestion. Six of the eight programs started in the early 1990s were mandated by legislation—with the indicators prescribed in five. Only three of the six programs started in 2000 and 2001 were legislatively mandated—and none had indicators prescribed by legislation (Burke & Minassians, 2001).

Performance Measures

Measures used to assess performance vary significantly from state to state. Some performance indicators evolved from the assessment movement of the 1980s and others can be attributed to long-standing efforts by some states to develop comprehensive planning systems for guiding the overall development of public higher education (Albright, 1995; Ashworth, 1994; Banta et al., 1996; Boatright, 1995; Burke, 1998; Ewell, 1994a, 1994b; Freeman, 1995; Hayes, 1995; Ruppert, 1995; Stein & Fajen, 1995). The movement toward accountability has been based in part upon the erosion of the national stature of colleges and universities similar to the crisis of authority and influence recently experienced by other governmental and health care sectors. Although indicators used for performance funding have their roots in accountability measures of the 1980s, there are notable differences. Accountability discussions focused primarily on

> campus-level educational quality, undergraduate instruction, and assessment of teaching and learning. The resulting assessment strategies were internally focused, institutionally developed, and largely voluntary in nature. A fundamental component of the early assessment movement was the belief that no single assessment model was appropriate for every type of institution. Consequently, any notion of comparing assessment results between institutions was considered inappropriate. (Neal, 1995, p. 6)

The use of assessment as an internal strategy to address public concerns about educational quality was greeted with enthusiasm and by 1990, forty states were actively promoting it (Ewell et al., 1990).

However, the 1990s saw a significant shift in tone. Policymakers seemed less interested in the issue of instructional quality and more concerned with issues of productivity and efficiency (Neal, 1995). Sandra Ruppert identified four converging conditions that contributed to the shift: decline in state appropriations for higher education, change in the demographic profile of students seeking postsecondary education, rising societal needs and expectations for higher education, and increased skepticism and scrutiny of all social institutions. In this changing environment, the voluntary assessment activities gave way to mandated performance measures that focused more on outcomes than on process. By 1995, about one-third of the states had adopted, or were considering adoption of, performance indicator systems ranging from those using easily quantifiable information such as faculty/student ratios to those using more qualitative measures such as minority student participation (Ruppert, 1995).

After five years into what has become known as the "performance phenomenon in higher education policy" (Bogue, Creech, & Folger, 1993; Ewell,1994b), critics (and even supporters) began to ask whether the effort was having the desired effect (Ruppert, 1995). In an effort to answer some of the questions surrounding performance indicators, the Education Commission of the States (ECS) initiated a two-year project in 1993 to conduct in-depth case studies of ten states that were among the leaders in designing and using performance indicators. The ten states included in the study were:

State	Year Implemented	Policy Originator
Colorado	1991	State higher education agency
Florida	1991	Legislature
Illinois	1991	State higher education agency
Kentucky	1992	Legislature
New York (SUNY system only)	1993	System office
South Carolina	1992	Legislature
Tennessee	1989	Legislature/State higher education agency
Texas	1992	Legislature
Virginia	1993	State higher education agency
Wisconsin	1992	Task force /State higher education agency

As can be seen from the list above, almost all of the case study states had their accountability policies originated by the legislature and/or the state higher education agency. The new accountability policies

> reflect the changing view that higher education needs to be more responsive to current conditions and state priorities and more publicly accountable to a broader, primarily external constituency that includes students, employers, parents, and the general public. Where such policies exist, most are designed to supplement rather than replace earlier campus-based approaches. The added requirement of reporting performance on a set of indicators is to give those with a stake in higher education a better sense of what is being measured and achieved with public resources." (Ruppert, 1995, p. 16)

The ESC study found that, despite broad differences, there were commonalities of performance indicators among the states. The twelve most commonly identified measures among the case study states were:

1. Total degrees awarded by institution and program and time to degree

2. Enrollment/retention/graduation data by gender, ethnicity, and program

3. External or sponsored research funds

4. Admission standards and measures of first-year class against standards

5. Number and percentage of accredited and eligible programs
6. Total student credit hours produced by institution and discipline
7. Remediation activities and indicators of remedial effectiveness
8. Transfer rates to and from two- and four-year colleges
9. Pass rates on professional licensure exams
10. Placement data on graduates
11. Results of follow-up satisfaction studies (alumni, students, parents, and employers)
12. Faculty workload/productivity data

As can be easily seen from the list, the common indicators tend to be quantifiable—a reflection of the policymakers desire to have measures that can be easily understood and interpreted by a wide audience. The similarity of factors across states reflects shared values and the fact that legislation was heavily shared among policymakers in different states. The actual number of factors in any state could range from three or four to twenty-five or more. In any case, performance indicators are typically "arrayed around broad public concerns for resource availability and use, the quality and equity of services provided, and improved productivity and efficiency. Often, the indicators are related to general priority categories…" (Ruppert, 1995, p. 18).

Ruppert proposed a framework for classifying performance indicators into five categories in a way that conforms generally to the issues or goals identified by states. Following are the five categories along with a brief description and some examples of indicators for each.

Educational Quality and Effectiveness. Undergraduate teaching and learning is emphasized in this category and the indicators reflect concerns about both cost-effectiveness and educational effectiveness. Quality performance indicators center around the "value added" by the educational experience and are quantified as input and output measures. This category also gives increasing recognition to the link between educational quality and processes pertaining to instructional good practice and resource investment in efforts associated with teaching.

Examples of indicators are: ACT and SAT scores of entering freshmen, number of students in remediation, remedial effectiveness, availability of academic programs, amount of financial commitment to instruction, student/faculty ratios, class size, type of faculty teaching lower-division courses, time to degree completion, course demand analysis, graduation rates, performance of graduates on licensure exams, job placement rates, graduate-employer satisfaction, number of degrees awarded by discipline, and number of degrees granted.

Access-Diversity-Equity. This category relates to higher education's ability to accommodate changing student demographic patterns and the changing needs of the student population.

Examples of indicators are persistence and graduation rates by ethnicity, availability of student financial aid, faculty diversity, college participation rates, progress in affirmative action, and student demographics.

Efficiency and Productivity. This category relates to how well, and at what cost, a campus, system, or state addresses its particular goals or priorities. Examples of indicators are program costs; time to degree and number of credits by institution and degree; classroom and laboratory utilization; charges to students; state appropriations per capita and per resident student; total contact hours of instruction by faculty rank, institution, and course level (faculty workload); facilities maintenance; average faculty salary; and student/faculty ratios.

Contribution to State Needs. This category reflects state policymakers' increasing expectation that higher education will help in meeting other state identified needs such as workforce preparation.

Examples of indicators are relation of program to employment needs, number of graduates in science and engineering, economic impact on state, continuing education activities, and employer ratings of "responsiveness."

Connection and Contribution to Other Education Sectors. This category reflects policymakers' desire to have higher education address concerns related to the educational system as a whole.

Examples of indicators are: effectiveness of remedial education, transfer rates from two-year to four-year institutions, feedback on performance to high schools, research and service in support of K-12, and performance of transfers at senior institutions.

Ruppert identifies two major problems affecting the ability of the performance indicators identified under each category to either provide useful information or to reflect public concerns. The first problem relates to the general nature of the categories. Unless a specific issue is stated, for example, in the form of a target, question, or standard, it is often difficult to determine exactly what the indicators are supposed to measure.

The second problem is the indicators themselves. Since the indicators are generally selected based upon the availability of data, they simply may not be the proper indicator for addressing a particular concern.

> Questions about whether data for an indicator are available and of good quality have sometimes preceded questions about what the data are for and how they will be used. This situation can lead to dire consequences for the rest of the policy-making process. In many instances, the selection of performance indicators is the starting point in accountability discussions. And, as such, the measures themselves have shaped the discussion about what is important, rather than an informed debate about more critical and pressing public policy issues affecting higher education and its role in the state's future. This point warrants emphasis because the results of such a debate can lead to the identification of clear goals or priority issues that provide a framework for the collection of performance data. (Ruppert, 1995, p. 19)

> Performance indicators are, in essence, a policy tool; as such, their value depends on how they are applied to the task of making policy...At their best, performance results can guide the development of higher education policy by contributing directly to solutions of specific policy problems or guiding tough choices about how to allocate resources...At their worst, performance results can send wrong-headed messages about priority concerns or simply short-circuit the debate about such issues altogether. (Ruppert, 1995, p. 20)

In 1996-97, the State Higher Education Executive Officers (SHEEO) conducted a survey to "determine the states' experiences to date with using performance measures" (Christal, 1998, p. vii). The survey was conducted from December 1996 through March 1997. Responses were received from forty-eight states. Only the results from Alaska and Massachusetts were not available. The survey defined performance measures as "any qualitative or quantitative measures used to report on higher education at the state, system, or campus level" (Christal, 1998, p. 13). Using this definition, the survey was much broader than the ECS study that was specific to performance budgeting and performance funding. However, the SHEEO survey found that no less than twenty-three states used performance measures in some manner to distribute state funds to higher education institutions. Sixteen had legislation requiring the use of performance measures in the budgeting process. Thirty-seven states were using performance measures in some manner—primarily to respond to accountability demands.

The survey disclosed some surprising information about who was involved in the development of performance measures for higher education in the states. Not surprisingly, the entities most involved in the development of the measures were the SHEEO agency/staff (24 heavily involved and 3 moderately involved) and the system governing board/staff (22 heavily involved and 3 moderately involved). What was surprising was that twenty-four states indicated that the legislature was at least moderately involved, and eighteen states indicated that the governor's office was at least moderately involved in the development of the measures.

The survey attempted to answer one important question raised by the ECS in-depth case studies—namely, "Does availability of data determine which performance measures are selected, or are measures selected because they provide important information for policymakers and consumers?" (Christal, 1998, p. 4). The answers provide some insight into the future direction of performance measures. Although twenty-seven states confirmed that the availability of data has determined their measures, thirty states indicated that new data collection efforts have been implemented or are planned. The new data collection efforts were focused in the areas of tracking students for graduation and transfer rates, faculty workload, remediation activities, and follow-up satisfaction studies.

The survey listed 12 commonly reported performance measures, and respondents were asked to indicate which ones are used in their states. Following is a list of the results in descending order of use by number of states.

Performance Measures	Number of States
Graduation rates	32
Transfer rates	25
Faculty workload/productivity	24
Follow-up satisfaction studies	23
External/sponsored research funds	23
Remediation activities/effectiveness	21
Pass rates on licensure exams	21
Degrees awarded	20
Placement data on graduates	19
Admission standards and measures	18
Total student credit hours	18
Number and percentage of accredited programs	13

As can be seen, there is considerable overlap in this list with the list of common measures found in the ECS case studies. Indeed, the lists are almost identical except for order. One interesting note is that, with all the discussion of outcomes orientation in performance measurement, four of the top five measures listed (graduation rates, transfer rates, faculty workload, and external research funds) are really productivity measures. Only one of the top five (follow-up satisfaction studies) is related to outcomes.

One of the questions in the survey was how higher education performance information is disseminated. Respondents indicated that almost every state provides performance reports to either the legislature or the governor's office. In most cases, performance reports were provided to both. Reports were provided to the higher education community in twenty states. Reports were provided as feedback to high schools in sixteen states. Nineteen states provided information directly to consumers, seventeen disseminated information via newspaper articles or press releases, and fifteen were providing information on web pages or through other electronic media.

The SHEEO report on the results of the survey focused on two aspects of the use of performance measures: (1) for consumer information, and (2) for state budgeting. The survey used a broad definition of consumer that included business and industry, elementary and secondary schools, and the general public and taxpayers as well as the typical students and parents. Eight states reported legislation with mandates for reporting performance information to consumers. Fifteen additional states reported they use performance measures to inform consumers about higher education. Robert Barak and Charles Kniker consider this accountability aspect of performance measures to be the most unusual use among all the various entities using performance measures for benchmarking (Barak, 2002). However, the information provided by the twenty-three states was the type that would be more useful to policymakers than to individual consumers.

More pertinent to this study are the survey results pertaining to the use of performance measures in state budgets. Responses to the 1997 SHEEO Survey on Performance Measures indicated that the use of performance measures in the budgetary process was continuing to grow. Twenty-three states reported using measures in at least an indirect budgeting manner. Eight states reported a direct linkage with funds allocated to institutions based upon performance (performance funding by the Rockefeller Institute definition). Another fifteen states reported considering performance measures in allocating resources, but with no direct linkage between the measures and funding (performance budgeting by the Rockefeller Institute definition). Although the results were not exactly the same as the Rockefeller Institute Survey, the numbers are relatively consistent. Nine more states reported to SHEEO that, although they did not currently use performance measures for budgeting, there were plans to do so within the next two years.

Respondents reported using performance measures for a number of purposes, including: encouraging institutional change, emphasizing state education goals, assessing the use of resources, linking planning with budgeting, program improvement, and program reduction and elimination.

Christal observes that performance-based funding should be closely connected to teaching and learning in order to have the most significant impact.

> Most states, however, reported in the SHEEO survey that faculty have little or no knowledge of the linkage between performance

> measures and the budget. Only seven states reported that faculty are involved in the process and understand the linkage. Where faculty are aware, they sometimes fear that state-mandated efforts undermine their responsibility for quality assessment. (Christal, 1998, pp. 9-10)

When asked whether institutional behavior had changed since performance measures have been linked to the budgetary process, eight respondents indicated behavior had changed, while four indicated it had not. Sixteen respondents reported that it was too early to tell.

When asked to assess the overall impact of performance reporting on bringing about greater effectiveness, productivity, and quality, half of the respondents reported that performance measures had made a “major positive impact” or “some positive impact.” The other half noted that it was “too early to assess” the impact. None of the states reported that performance measures had had “no impact” or a “negative impact.” The SHEEO report concluded, “Although the jury is still out, ultimately, the test for determining the effectiveness of performance measures will be whether a positive change occurs in teaching and learning” (Christal, 1998, p.10).

Performance in Florida

Budget reform in Florida has mirrored the rest of the country. As early as the 1950s, academic articles from Florida institutions could be found contrasting budgeting by objects of expenditure with budgeting by government functions and objectives, and noting that, as state needs become more complex, legislators need a budget process that provides greater information. Such ideas were put into motion in 1967 with the passage of the State Planning and Programming

Act. This act introduced the concepts of long-range state planning and short-range action programs to Florida government (OPPAGA, 1997).

The Act created an Office of State Planning that initiated a planning-programming-budgeting system (PPBS) that categorized state government activities into a taxonomy of ten state programs or policy areas that cut across agency organization. The taxonomy was supposed to provide each policy area with financial information related to its goals and objectives for six years. The reorganization of Florida government that passed in 1969 required each department to compile a comprehensive program budget reflecting all program and fiscal matters related to the department and each program, subprogram, and activity. The PPBS taxonomy was completed by 1970 and the agencies were prepared to use it for budget preparation.

Although the resulting program structure provided an adequate description of the services and programs of state government, the effort to link planning to budgeting failed for some of the same reasons that similar efforts failed in other states and at the federal level. Interviews conducted by the Florida Office of Program Policy Analysis & Government Accountability with agency staff who had been involved in the effort disclosed that Department of Administration budget staff were reluctant to abandon the line-item system that facilitated expenditure control in favor of long-range planning that did not take fiscal constraints into account. In addition, agencies did not have the resources (hardware/software/staff) to create a program budget with the type of analysis required. Consequently, they did not use the program structure for their fiscal year 1971-72 budget requests. Many of the agency staff questioned whether the extensive workload would yield benefits in the legislative process.

Due to a lack of support for the new PPBS taxonomy, the appropriations bills of the early 1970s continued to use the bureaucratic organizational structure lines and were not cross-walked to the new program structure. Consequently, the budgeting system could not be used to display funding for programs and their objectives. Staff indicated

> that PPBS was not explicitly abandoned, as the program structure was eventually used for agency budget requests in order to show program objectives. However, the key ideas of planning and measuring achievement of objectives were not embraced by the Legislature and so were not central to the budget decision-making process. (OPPAGA, 1997, p. 6)

In the 1980s the Florida Legislature shifted its attention from program budgeting to strategic planning for state and local governments based on a comprehensive state plan. By the mid-1980s the Governor's Office and the Legislature had instructed agencies to integrate strategic planning and operational budget preparation to produce budgets that would be consistent with agency goals. The program structures from the earlier PPBS efforts were modified and incorporated to a limited degree in the statewide accounting system so that program structure could be linked to expenditure information and budget preparation.

> However, the performance measures included in legislative budget requests in the 1970s and 1980s were often output or workload measures that were not easily understood outside the agency and that did not describe results. Over time both the executive and legislative branches considered these measures inaccurate and irrelevant to management or budget decision-making. (OPPAGA, 1997, p. 7)

In the 1990s, legislative and executive attention shifted toward performance as opposed to strategic planning. The Government Performance and Accountability Act of 1994 accented both improved performance and increased accountability (Laws of Florida, Chapter 94-249, 1994). It was adopted for all Florida state agencies as part of a plan to reinvent government (Burke & Serban, 1998c).

In its report on performance-based program budgeting in Florida, the Office of Program Policy Analysis & Government Accountability made several observations about budget reform efforts in Florida and provided some insight into why the current effort might have a better chance of success. Observations about past efforts were:

Ambitions of budget reforms have often outstripped the analytic and information management capacity of government agencies. The labor-intensive nature of these systems led to a recognition that they were not feasible.

- Lack of leadership support in both the executive and legislative branches allowed reform efforts to falter. There must be real commitment from all parties to shift budgeting towards directing results as well as overseeing spending.
- Rational, planning-based systems must not be expected to replace the political process of making resource choices in a highly complex environment of competing interests. Such systems may focus on government structure and thus seem divorced from operations and

performance. It may appear impractical as a decision tool and unrelated to pressing, immediate concerns (OPPAGA, 1997).

Thoughts on why Florida's current budget reform effort may have a greater chance of success than previous reform efforts were:

- The PB^2 effort takes place in an environment of increasing public discontent with government results and increasing demand for more government accountability.
- Its design is more focused on performance or effect of government functions than on government structure.
- It emphasizes results or outcomes and offers agencies increased management flexibility in exchange for accountability through performance information. Such flexibility may allow management innovation or tailoring resource use to solve problems.
- Because prior reforms brought trained professionals into the public sector to support systematic analysis in public budgeting, performance objectives and results may be better measured today than in the past. Also, modern computer systems are capable of such analysis.
- PB^2 in Florida was established as a legislative initiative and enjoys leadership support (OPPAGA, 1997).

Performance in Florida Higher Education

Assessment and accountability are not new concepts for Florida higher education. Assessment activities began in 1979 when the Articulation Coordinating Committee, created by the State Board of Education, developed a list of competencies that were later adopted (Van de Water, 1994). The Standing Committee on Student Achievement reviewed a number of commercially available testing packages and concluded there was no test available to appropriately assess the list of competencies required by the state (Brown, 1999). As a result, the legislature and State Board of Education initiated an effort to design and implement a competency-testing program for sophomores in college. This testing program became known as the CLAST (College Level Academic Skills Test), and required students to pass all of the subtests in order to receive an A.A. degree (Holcombe, 1997).

At the same time, the legislature and State Board of Education instituted a requirement for mandatory placement testing of all students entering degree programs in community colleges. The tests cover English, reading, and mathematics skills. Students not passing the placement tests are required to enroll in college-preparatory (non-credit) courses before enrolling in college-level coursework. The aggregated student test scores on both the CLAST and placement tests are regularly published. Such publication encourages improvement, but it also strains communications between community colleges and the public school system because student failures on the placement tests are seen as a negative commentary on the effectiveness of the K-12 system (Holcombe, 1997).

Throughout the rest of the 1980s, state initiatives were taken to focus on program outcomes and program effectiveness. FTE funding for avocational non-credit lifelong learning instruction was dropped, many services provided by the college had to be fully supported by student fees. Mandatory program review processes were adopted by the State Board of Community Colleges at the urging of the legislature, and common definitions for such terms as job placement, program completers, and program leavers were agreed upon. Additional state reporting was required to improve data collection to support assessment (Holcombe, 1997).

In 1991, the Legislature laid the foundation for the current performance funding system in Florida with the passage of Section 240.324, Florida Statutes. Subsection (1) of the statute reads as follows:

> It is the intent of the Legislature that a management and accountability process be implemented which provides for the systematic, ongoing improvement and assessment of the improvement of the quality and efficiency of the Florida Community College System. Accordingly, the State Board of Community Colleges and the community college boards of trustees shall develop and implement an accountability plan to improve and evaluate the instructional and administrative efficiency and effectiveness of the Florida Community College System. This plan shall be designed in consultation with staff of the Governor and the Legislature and must address the following issues:
>
> (a) Graduation rates of A.A. and A.S. degree-seeking students compared to first-time-enrolled students seeking the associate degree.
> (b) Minority student enrollment and retention rates.
> (c) Student performance, including student performance in college-level academic skills, mean grade point averages for community college A.A. transfer students, and community college student performance on state licensure examinations.
> (d) Job placement rates of community college vocational students.
> (e) Student progression by admission status and program.
> (f) Vocational accountability standards identified in s. 239.229.
> (g) Institutional assessment efforts related to the requirements of s. III in the Criteria for Accreditation of the Commission on Colleges of the Southern Association of Colleges and Schools.

> (h) Other measures as identified by the Postsecondary Education Planning Commission and approved by the State Board of Community Colleges.

Subsection (3) of the statute further stipulates that the

> State Board of Community Colleges shall address within the annual evaluation of the performance of the executive director, and the boards of trustees shall address within the annual evaluation of the presidents, the achievement of the performance goals established by the accountability process.

By the end of 1992, a state implementation committee had identified five core outcome measures in response to the legislation. The first measure deals with rates of enrollment, retention, and success. The second deals with the academic performance in the upper division of the state university system of associate of arts graduates. The third measure considers vocational graduates' state licensure exams passage rate and placement in a job related to their academic training. The fourth measure evaluates the success of students in completing college preparatory work in English, reading, and math, and their subsequent retention and success in college-level studies. The final measure is the passing rate of students on the College Level Academic Skills Test (CLAST).

> As Florida educators implemented these measures into the state's accountability plan, the inevitability of having this plan linked to funding grew more apparent. This link was realized in two ways during the 1994 legislative session, when Performance-Based Training and Budgeting legislation was passed. (Tyree & Hellmich, 1995, p. 18)

The Performance-Based Training and Budgeting program was short-lived, but the data collection system established to support it continues to support the Workforce Development funding system today. The Performance-Based Training and Budgeting program combined various state and federal funds that were awarded to colleges and school districts that were willing to wager twenty percent of their base funding for certain vocational programs. The colleges and school districts earned their own funds back, plus additional incentive funds based upon their ability to train targeted populations and place them in related jobs.

The current system of performance budgeting/funding for higher education in Florida is part of the implementation of performance budgeting for all Florida state agencies mentioned earlier. The Government Performance and Accountability Act of 1994 accented both improved performance and increased accountability (Laws of Florida, Chapter 94-249, 1994). The legislation required the Division of Community Colleges to submit a performance-based budget in the fall of 1995 for implementation in the 1996-97 fiscal year. The State University System was to follow the subsequent year. However, policymakers had trouble aligning the generic requirements for state agencies with the unique characteristics of higher education. Conflict arose between the governor's office and the state Senate over how to implement performance funding for higher education in Florida. The executive branch favored performance-based program budgeting, which uses a broad range of outcome measures to influence the total allocation for colleges. The state Senate wanted performance incentive funding, which ties specific amounts to institutional performance based on a limited number of selected indicators.

The result has been two separate performance budgeting/funding systems for Florida community colleges since 1996-97. Although they are both called

Performance Based Budgeting, one (the Senate version) is actually performance funding. In compliance with the Government Performance and Accountability Act, certain performance measures (closely aligned with the accountability measures previously discussed) are identified in the appropriations bill and are required to be reported each year. These reports are then available for the executive and legislative branches to consider when establishing the total allocations for higher education without tying specific amounts to specific indicators (true performance budgeting).

The other system, developed by the Division of Community Colleges at the Senate's insistence, allocates a fixed amount of money each year to the colleges based upon total points earned on a few specific measures (performance funding). In the first year (1996-97) of the performance funding program—hereafter identified as Performance Based Budgeting or PBB—a $12 million appropriation for community colleges was divided among three measures: degree and certificate completers ($5 million); completers who were at-risk students, passed licensure exams, or were placed in targeted jobs ($5 million); and completers who graduated with no more than 72 credit hours attempted ($2 million) (Laws of Florida, 1996, Chapter 96-424, 172A).

Since 1996-97, the Legislature has funded Performance Based Budgeting for community colleges in varying amounts: 1997-98, $12.0 million; 1998-99, $4.8 million; 1999-2000, $8.1 million; 2000-2001, $8.3 million; and 2001-2002, $8.3 million. The measures have remained essentially the same. There were no changes in the measures for 1997-98 from 1996-97. In 1998-99, black males were added to the special populations in Measure II, and the time-to-degree (excess hours) Measure III was dropped in favor of Postsecondary Vocational Certificate partial completers. In 1999-2000, vocational program completers were dropped from Measure I because of separate funding for vocational programs through the Workforce Development Education Fund. Partial completers in vocational certificate programs were eliminated as Measure III and in their place a new Measure III was added that awarded partial points based on total hours completed for Associate degree program students who transferred to the State University System prior to completing their degree or left for specified employment prior to completing their degree.

Beginning in 2000-2001, partial points were awarded in Measure I for Dual Enrolled students' credit hours based on the assumption that most of these students would not continue at the institution until receiving their degree. A fourth (but not identified as such) measure was added that awarded points for college preparatory success (number of students passing the highest level college preparatory course in each subject area). The 2001-2002 measures were unchanged from 2000-2001.

The performance arena for community colleges became more complicated in 1997-98 with the establishment of the Workforce Development Education Fund (WDEF). The fund was created by combining a portion of funds for community colleges with a portion of funds for school districts into a single fund for workforce development education. The plan was to create a "level playing field" in which colleges and school districts would earn the right to offer programs based upon their performance. Section 239.115(4), Florida Statutes states that

> The Florida Workforce Development Education Fund is created to provide performance-based funding for all workforce development programs, whether the programs are offered by a school district or a community college. Funding for all workforce development education programs must be from the Workforce Development Education Fund and must be based on cost categories, performance output measures, and performance outcome measures. This subsection takes effect July 1, 1999.
>
> Section 239.115(4)(c) further requires that
>
> The performance outcome measures for programs funded through the Workforce Development Education Fund are associated with placement and retention of students after reaching a completion point or completing a program of study. These measures include placement or retention in employment that is related to the program of study; placement into or retention in employment in an occupation on the Workforce Estimating Conference list of high-wage, high-skill occupations with sufficient openings, or other High Wage/High Skill Program occupations as determined by Workforce Florida, Inc.; and placement and retention of participants or former participants in the welfare transition program in employment. Continuing postsecondary education at a level that will further enhance employment is a performance outcome for adult general education programs. Placement and retention must be reported pursuant to ss. 229.8075 and 239.233.

Section 239.115(6)(b) requires that "...state funding shall equal 75 percent of the average cost of instruction with the remaining 25 percent made up from student fees" and subsection (7) reads as follows:

> (a) Beginning in fiscal year 1999-2000, a school district or a community college that provides workforce development education funded through the Workforce Development Education Fund shall receive funds in accordance with distributions for base and performance funding established by the Legislature in the General Appropriations Act, pursuant to the following conditions:

1. Base funding shall not exceed 85 percent of the current fiscal year total Workforce Development Education Fund allocation, which shall be distributed by the Legislature in the General Appropriations Act based on a maximum of 85 percent of the institution's prior year total allocation from base and performance funds.

2. Performance funding shall be at least 15 percent of the current fiscal year total Workforce Development Education Fund allocation, which shall be distributed by the Legislature in the General Appropriations Act based on the previous fiscal year's achievement of output and outcomes in accordance with formulas adopted pursuant to subsection (9). Performance funding must incorporate payments for at least three levels of placements that reflect wages and workforce demand. Payments for completions must not exceed 60 percent of the payments for placement. For fiscal year 1999-2000, school districts and community colleges shall be awarded funds pursuant to this paragraph based on performance output data generated for fiscal year 1998-1999 and performance outcome data available in that year.

The first part of subsection (7)(a) that reads "Beginning in fiscal year 1999-2000" was a subsequent addition to the law. The fund was established in 1997-98, and the performance aspect of the program was expected to begin the following year. Due to delays in establishing the databases required to support the performance allocations, the performance aspect of the program was not implemented in 1998-99. Because the performance allocations were not available for 1998-99, and because the Legislature believed that there was a significant number of non-productive vocational programs in existence in the state, the 1998-99 Workforce Development Education Fund (WDEF) allocations were made at the same level as 1997-98. Community colleges and school districts were expected to eliminate non-productive programs in order to meet the resource demands for new/expanded programs.

The original WDEF was established using different approaches for school districts and community colleges—a fact that has caused some concern ever since and impacts the performance allocations because the performance allocations are based upon fifteen percent of a recipient's base allocation from the prior year. The school district portion of the original fund was based upon a projection of enrollments multiplied by a base student allocation in the same manner that other public school programs are funded. However, since community colleges are not funded based upon enrollment, another method of calculating the workforce allocation was required. The Senate decided that the community college portion of the WDEF should be based upon the resources devoted to workforce programs at the time. To approximate the resources being devoted by the colleges to workforce programs, the colleges' annual cost analysis reports were used. The most recent cost analysis report that was available was for the 1995-96 year. A spending profile was developed for each college based upon the 1995-96 cost report, the profile was pro-rated upward to the 1996-97 appropriation level, and the resulting amounts for workforce related program areas state-support were added together to establish the 1997-98 WDEF allocation for each college.

For school districts, the WDEF allocation represented less than 7.5 percent of the total allocation for educational programs delivered by the districts. For community colleges, the WDEF allocation was approximately 40 percent of the total for educational programs delivered by the colleges. For one college heavily involved in vocational instruction, the WDEF represented 85 percent of its total state support. Certain members of the community college contingent have complained about the methodology from the beginning for several reasons.

1. All school districts' allocations were calculated using the same base student allocation. For the colleges, the amount was established based upon each college's unique costs—which vary significantly from college to college depending upon factors such as size and program mix.
2. The calculation for the colleges did not consider changes in vocational instruction effort between 1995-96 and 1997-98.
3. The calculation for the colleges assumed that all postsecondary vocational (college credit vocational instruction) was taken for Associate in Science degree purposes. Studies have shown that less than 40 percent of such instruction is taken by students seeking an A.S. degree.
4. No provision was made in the law for base adjustments to accommodate significant changes in level of vocational instructional effort by an institution.

Allocations to community colleges from the WDEF have remained relatively constant. Actual allocations have been: 1997-98, $296,042,794; 1998-99, $294,593,889; 1999-2000, $301,787,490; 2000-2001, $312,706,037; and 2001-02, $314,826,452. However, some of the differences in these appropriation totals reflect changes in included programs, program transfers between school districts and community colleges, and corrections of errors in calculations. When adjusted for changes, transfers, and corrections, the appropriations were: 1997-98, $302,435,329; 1998-99, $302,435,329; 1999-2000, $305,011,472; 2000-2001, $314,161,675; and 2001-02, $314,826,452.

Given these two performance funding initiatives for community colleges, what has been the impact? One study was found that addressed the PBB program for Florida's community colleges. A dissertation by Mark Allen Poisel in 1998 attempted to:

- clarify the intent of performance-based budgeting for the community college system.
- explore the program implementation to determine if program objectives and performance measures are being accomplished as intended.
- identify any opportunities for improvements in the program and performance by Florida community colleges related to the prescribed performance measures.

Poisel found mixed results. Some college presidents indicated that they were making changes at their institution as a result of PBB implementation, but others claimed that they had changed little since the program's implementation. Two problems were noted with the program: it does not provide standards; and since the funds are distributed based upon an institution's share of total points earned, it is possible for an institution to improve performance and still receive less funds if their rate of improvement is less than the other colleges. Poisel's conclusion was that PBB appears to have "been implemented as intended given the vague nature of the intentions and the flexibility given to the presidents. However, it is difficult to tell if the policy and its implementation will lead to increased or improved outcomes" (Poisel, p.104).

The Concept of Equity

Equity is defined as "justice according to natural law or right; specifically: freedom from bias or favoritism" (Merriam-Webster's Collegiate Dictionary, 2001). Kern Alexander observes that:

> Equity in its broadest sense encompasses justice, equality, humanity, morality, and right. To deal with the term requires substantial delimitation, for what is equitable depends to a great

> extent on the orientation of both the dispensers and receivers of equity. Equitable treatment may find its basis in the natural law of Thomas Aquinas, but yet be tempered by the utility of Jeremy Bentham, as well as by modern Rawlsian concepts of freedom and justice. Within these boundaries falls the necessity of government to deal with human wants and needs and to serve the common good. (Alexander, 1982, p. 194)

Throughout history, various governments and philosophers have struggled with the concept of equity and have attempted to reduce the concept to an operational definition (Hayek, 1976; Rawls, 1977; Robertson, 1967). An adequate treatment of this historical perspective is beyond the scope of this study, but there are a few concepts that should be understood to provide a proper perspective for this study.

Commutative and Distributive Equity

Two significant categories in which the concept of equity is often classified are commutative and distributive. In commutative equity, a person is entitled to something simply because it is his. This libertarian concept does not affect the distribution produced by the market place—someone simply owns something because of a private and individual relationship. Distributive equity, on the other hand, is the direct result of conditions created by various kinds of redistributions of social benefits which every society is called upon to make. It is this concept of equity with which governments struggle and in which issues of public school finance most commonly arise (Alexander, 1982; Hayek, 1976).

> The redistribution of the resources of society to the individual is one side of the equation, while the debt of the individual (what is owed to society) is the other. These interact to circumscribe the degree of equity which can be maintained in the educational system. ... Hayek believes that equity is served if government does not grant benefits in unequal proportions to certain persons, to the detriment of others. (Alexander, 1982: p 196-197)

Rawls's Positivism

John Rawls is recognized for advancing the philosophy that positive affirmative relief through an unequal distribution of goods by government is justified if these goods operate to the advantage of the "least favored" (Alexander, 1982). "All social primary goods, liberty and opportunity, income and wealth, and the bases of self-respect are to be distributed equally unless an unequal distribution of any or all of these goods is to the advantage of the least favored" (Rawls, 1977: p. 303).

The Concept of Equity in Public Schools

The works of scholarly writers such as Hayek and Rawls furthered the concept of equity in public education finance, but its roots are found earlier. Ellwood Cubberley is generally credited with being one of the first to advance the concept of equity in public school finance with his writings in the early 1900s (Alexander, 1982; Kearney & Chen, 1989, Thompson et al., 1994; Wood & Thompson, 1996). In 1906 Cubberley published a monograph based on his doctoral work in which he argued what were then revolutionary concepts: (1) it was the state's responsibility to provide minimum education programs and (2) it was the state's responsibility to encourage innovative educational behavior in schools. His "hypotheses formed the basis of his subsequent studies about the effect of school finance plans on educational opportunity" (Thompson et al., 1994, p. 212). These later studies led to his greatest contributions in the new field of education finance, one of which was the notion that all children in a state are entitled to the same advantages. By advancing this argument, he moved the focus of school funding into the fairness and justice arena (Thompson et al., 1994).

Other theorists and scholars built upon Cubberley's foundation. In 1922, Harlan Updegraff extended the responsibility of the state along three important lines: (1) the state had a responsibility to aid communities in support of schools, (2) state aid should vary by local district wealth and according to tax effort, and (3) funding should be based on a standardized teacher unit, rather than granting funds based on the number of teachers employed by a district. In 1923, George Strayer and Robert Haig published *The Financing of Education in the State of New York*. They are credited with expanding the concept of the state's responsibility to include a minimum education for all children in a state. Their concept contained three revolutionary elements: (1) that schools be required to make uniformly available to every child in the state some prescribed minimum level of education, (2) that the same requirement of minimum uniformity reflect ability to pay in a state or local education tax, and (3) that a state department of education assume responsibility for direct fiscal administration. Another major advancement was made in 1924 in when Paul Mort published his doctoral dissertation *The Measurement of Educational Need*. Mort went beyond Strayer and Haig's advocacy for a minimum program by attempting to define criteria by which such a program could be judged. He argued that a minimum program should meet three criteria: (1) the cost of an educational program was equivalent to the measure of educational need, (2) the educational need of a community is quantifiable as the composite of all those elements that affect the cost of those programs that the state requires, and (3) a satisfactory minimum opportunity was synonymous with a satisfactory equalization program (Thompson et al., 1994).

The Concept in Practice

State legislatures responded to the work of the early theorists by developing state aid formulas and the debate shifted from philosophical and scholarly to practical and operational as the courts became involved. Initially state aid was provided through flat grants which were considered to be equitable because the same amount of funds per student were given to each school district without regard to any other conditions. However, the shortcomings of the flat grant soon became apparent when the ability of the local district to fund its share of the total cost was considered. Consequently, the flat grants gave way to more sophisticated formula equalization plans and minimum foundation plans as states took on more responsibility in the public school finance arena.

Formula equalization plans essentially conceded four critical tenets of taxation and equal opportunity that represented the next major shift in public school finance. The first tenet was that differential resources can lead to uneven quality, and that equalizing differences is mandatory if equal opportunity is to be achieved. The second tenet was that it was the state's responsibility to redress inequality by overcoming local tax base inadequacy. The third tenet was that "neutral" aid (flat grants) is inadequate in that blind equality at best has no effect, or at worst aggravates the problem by giving funds to those who do not need them. Finally, inequality is fundamentally a tax base problem and state intervention must be proactive rather than benevolent. Given these four tenets of taxation and equal opportunity, the acceptance of state responsibility required new aid schemes that embraced state and local sharing of school costs (Thompson et al., 1994).

These new aid schemes could generally be classified into one of two philosophies. The first philosophy's (concept of minimum foundation) goal is to impose certain minimum standards on the local districts and to grant state aid inversely to the district's ability to pay to help them reach those standards. Education finance pioneers, George Strayer and Robert Haig, argued in 1923 that a foundation formula should reach several goals. They argued that educational programs should be based on the wealthiest district, that a minimum foundation plan should encourage local initiative, that the plan should reward efficiency, and that the plan should make districts fiscally competitive so that program differences would reflect local choices rather than the effects of local ability or inability to pay (Strayer and Haig, 1923).

The second major philosophy of formula equalization plans was that of resource accessibility. Although minimum foundation programs and resource accessibility plans both seek to equalize educational opportunity by offering aid in inverse relation to ability to pay and both schemes argue that resources have a meaningful impact on educational opportunity, resource accessibility programs focus on a more aggressive equal access philosophy. Some have even called it an equal total provision philosophy. Resource accessibility plans demand that the state share in educational costs at a level determined by the local district. They require equal access to resources rather than initially uniform levels of funding. Such plans tend to be more concerned about whether students have equal access to resources than whether resources are initially uniform or even finally equal as long as the opportunity to access the resources is available with no district at a disadvantage (Thompson et al., 1994).

Although minimum foundation programs and resource accessibility plans both seek to equalize educational opportunity, they both leave local districts free to supplement expenditures resulting in differences in expenditures among districts. In reality, many states use combinations of minimum foundation programs and resource accessibility plans with differences in expenditure levels still occurring among districts. Some scholars believe that the only way to achieve true equality is by having full state funded plans which have proved politically unpopular for a variety of reasons.

Given these differences in expenditures among districts, theorists began to search for a framework to evaluate equity in state school finance plans. Robert Berne and Leanna Stiefel proposed such a framework (Berne & Stiefel, 1979; Odden, Berne, & Stiefel, 1979) that became "widely accepted and utilized by many researchers in school finance equity" (Sample & Hartman, 1990, p. 50). The framework was based on four questions (Berne & Stiefel, 1979, 1984; Kearney & Chen, 1989; Sample & Hartman, 1990):

1. Equity for whom? Who are the different groups for whom school finance systems should be equitable?
2. Equity of what? What services, resources or more generally, objects, should be distributed fairly among these groups?
3. What are the different equity principles that can be used to determine whether the distribution is fair?
4. How should the degree of equity be measured?

The answer to the first question is usually one of two traditional choices: children and taxpayers. The answers to the other three questions follow, regardless of the answer to the first.

Equity for Taxpayers

If the answer to the first question is taxpayers, there are numerous objects that might be considered for distribution and equity. Consideration from the taxpayer's perspective is, in many ways, more complex than, and conceptually not as well developed as, from the student perspective (Odden et al., 1979). Tax burden is one object that could be considered. Tax burden is usually defined as the taxes paid by taxpayers, and is usually stated as a percentage of the taxpayers' ability to pay. For example, one common tax burden measure is taxes as a percentage of income. If tax burden is the object, there are several options such as tax burdens on school districts vs. tax burdens on individuals; education taxes vs. taxes for all public services; local taxes vs. state taxes, or some combination of the two; and legal tax incidence vs. economic tax incidence. There are also choices to be made on what ability to pay measure should be used: current or lifetime income, income from salaries and returns from investments, transfer payments such as social security and imputed income such as for work around the house. In all cases there are value judgments to be made adding to the complexity of the analysis.

There are other objects with other principles, but continuing the framework with the answer to the first question being taxpayers and the object being tax burden, two principles frequently considered are horizontal and vertical equity.

Horizontal equity means equal tax burdens for taxpayers with equal ability to pay. It can be affected by inconsistencies in assessment practices. Vertical equity considers the relationship among tax burdens by varying levels of ability to pay. Taxing schemes used to address vertical equity can be regressive, proportional or progressive. A regressive tax burden decreases with higher ability to pay, proportional tax burdens are constant over all ranges of ability to pay, and progressive tax burdens increase with increasing ability to pay. The degree of regressivity or progressivity is another value judgment that adds to the complexity of the analysis.

If the answer to the first question is taxpayers, the measures used in response to question four are complex, fraught with many technical problems (Odden et al., 1979) and beyond the scope of this study. An examination of the framework relative to students (children), however, is particularly relevant to this study.

Equity for Children

If the answer to the first question in the framework is children, then the answer to the second question might include objects from three general categories: inputs, outputs and outcomes. Inputs are the resources or services provided by the school system. Traditionally they have been defined as revenues or expenditures per child. But even when it is decided that revenues or expenditures per child is the object to be examined, an analyst still must decide whether revenues from all sources are to be included. Outputs generally relate to student behaviors. Results on achievement test scores, mastery of competency levels in different subject areas, passing of minimal competency tests, high school graduation, or any number of other measures might be considered as output concerns. Outcomes refer to long-range results such as income, occupational status, personal satisfaction, ability to compete in the labor market, or status in life (Odden et al., 1979). Most of the studies have focused on inputs (Berne & Stiefel, 1984).

Continuing if the answer to the first question is students, the answer to the third question generally involves three principles: equal treatment of equals, unequal treatment of unequals, and equal opportunity. The first principle, equal treatment of equals, states that students who are alike should receive equal shares. This concept has become known in educational finance circles as horizontal equity (Berne & Stiefel, 1984; Brown, 1999; Harrell, 1992; Jones & Salmon, 1985). Horizontal equity is assessed by measuring the dispersion or inequality in the distribution of the object being evaluated. If there is no dispersion, there is perfect equity.

The second principle, unequal treatment of unequals, recognizes that students are different and requires that unequal students receive appropriately unequal treatment. This concept has become known in educational finance circles as vertical equity (Berne & Stiefel, 1984; Brown, 1999; Harrell, 1992; Jones & Salmon, 1985). While there is rarely agreement on identification of "unequals" in school finance, children with handicapping conditions, poverty background and limited English speaking ability are usually recognized as deserving unequal treatment. Particular school district characteristics, such as size and population sparsity are also recognized as legitimate reasons for differential treatment.

The third principle incorporates the concept of equal opportunity or nondiscrimination. "The equal opportunity principle can be formulated as a negative principle; there should not be differences according to characteristics that are considered 'illegitimate' (or unconstitutional) such as property wealth per pupil, household income, fiscal capacity or sex" (Odden et al., 1979).

Measures of Equity in Public Schools

The answer to the question of how the degree of equity should be measured if the subject is children depends, to some extent, upon the object being distributed and the particular equity issue being emphasized. Numerous measures have been developed over the years to address horizontal equity or equal treatment of equals (Berne & Stiefel, 1984; Goertz, 1983; Thompson et al., 1994). The repeated use of these statistical measures has firmly established a "well defined and generally accepted methodology for the measurement of equity" (Cronk & Johnson, 1983, p. 502). The measures have "evolved through long political processes and attempts to balance the distribution of scarce resources in every state" (Wood & Thompson, 1996, p.18). Odden lists eleven such measures:

1. The range - the difference between the highest and the lowest.
2. The restricted range - the difference between the 95th and the 5th percentiles.
3. The federal range ratio - the restricted range divided by the value at the 5th percentile.

> 4. The relative mean deviation - the absolute value of the sum of the differences of each revenue figure from the mean revenue, as a proportion of total revenue.
>
> 5. The McLoone Index - the ratio of the actual revenues of students below the median to the total, if all students were at the median.
>
> 6. The variance - the average of the squared deviations of each revenue figure from the mean revenue.
>
> 7. The coefficient of variation - the standard deviation divided by the mean.
>
> 8. The standard deviation of the logarithms - the square root of the variance of the logarithm of revenues.
>
> 9. The Gini coefficient - shows how far the distribution is from providing each percentage of students (e.g., five percent of students) with equal percentages of revenues (e.g., five percent of revenues).
>
> 10. The Theil measure - based on the thermodynamic concept of entropy and shows how far each student is from receiving an equal share of revenues.
>
> 11. Atkinson's Index - based on the economists' idea of a social welfare function and capable of weighting the bottom end of the distribution as much as desired. (Odden, 1979, pp. 19-20)

As can be seen by the brief description above, each statistic is different, and according to Odden, each incorporates value judgments. Six of the above statistics have been applied to community college funding research. Accordingly, they are described in more detail here.

The six common statistical measures used to study public school finance equity that have also been used for community colleges are range, restricted range, federal range ratio, coefficient of variation, McLoone index, and the Gini coefficient (Berne & Stiefel, 1984; Odden et al., 1979; Thompson et al., 1994; Wood & Thompson, 1996). The Lorenz curve is a graph that is often used to depict and explain the Gini coefficient (Bezeau, 1979; Odden, 1992; Thompson et al., 1994).

Range

The range is a simple, general statistical dispersion measure defined as the difference between the highest and the lowest observations in a distribution (Thompson et al., 1994). In public school finance studies, it is the difference between the highest and the lowest per-pupil revenue/expenditure (Berne & Stiefel, 1984) and has been used extensively to measure per-pupil equity (Crampton, 1991; Cronk & Johnson, 1983; Garris & Cohn, 1996; Hirth, 1994; Johnson & Pillianayagam, 1991; Kearney & Chen, 1989; King, 1983; Mark & Carruthers, 1982; Oesch & Paquette, 1995; Sample & Hartman, 1990; Stark et al., 1993; Stiefel, Rubenstein, & Berne, 1998; Verstegen, 1987, 1994, 1996; Verstegen & Salmon, 1989, 1991). If the funding distribution is equitable, the results of the calculation for the range will be relatively small; and if the distribution is not equitable, the calculation will be large. One of the major weaknesses of the range calculation is that it does not consider the effect of discrepancies caused by the highest or the lowest observation being an outlying extreme. The distribution could be equitable for 95% of the observations, yet one extreme outlier results in a large range calculation. The range is also sensitive to inflation. Studies over time might show a large range that is simply a reflection of inflation rather than a true inequity. Many researchers have compensated for this inflation issue by using the Consumer Price Index to adjust dollars for multiple year studies (Hirth, 1994).

Restricted Range

The restricted range measurement is a variation of the range that attempts to compensate for the outlier problem. The restricted range calculates the difference between observations at the 95th percentile and the 5th percentile. By eliminating the outlying extremes the researcher gets an improved representation of overall equity when there are few extremes. However, even with the restricted range, there can still be outliers that fall within the 95th and 5th percentiles that distort overall equity; and, like the range, the calculation is sensitive to inflation (Hirth, 1994).

Notwithstanding its limitations, the restricted range has been analyzed in a number of studies on per-pupil revenue/expenditure equity (Cronk & Johnson, 1983; Garris & Cohn, 1996; Goertz, 1983; Hirth, 1994; Johnson & Pillianayagam, 1991; Kearney & Chen, 1989; King, 1983; Oesch & Paquette, 1995; Sample & Hartman, 1990; Stark et al., 1993; Verstegen, 1987, 1994, 1996; Verstegen & Salmon, 1989, 1991).

Federal Range Ratio

The federal range ratio was "originally designed as a federal test to measure whether states met federal wealth neutrality guidelines in distributing federal funds" (Thompson et al., 1994, p. 248). Described as the "federal measure of disparity" (Hickrod, Hines, Anthony, Dively, & Pruyne, 1980, p.182), the federal range ratio is calculated by dividing the restricted range by the revenue per pupil per district at the 5th percentile. By expressing essentially the same information as the restricted range statistic, only in terms of a ratio, the federal range ratio overcomes the inflation problem and is, consequently a "more acceptable statistic than range or restricted range" (Hirth, 1994, p. 174). The smaller the decimal calculated for the federal range ratio, the more equitable the distribution.

The federal range ratio has been used in numerous studies of per-pupil revenue/expenditure equity (Cronk & Johnson, 1983; Garris & Cohn, 1996; Goertz, 1983; Hertert, Busch, & Odden, 1994; Hirth, 1994; Johnson & Pillianayagam, 1991; Jones & Salmon, 1985; Kearney & Chen, 1989; King, 1983; Lake, 1983; Oesch & Paquette, 1995; Sample & Hartman, 1990; Stark et al., 1993; Verstegen, 1987, 1994, 1996; Verstegen & Salmon, 1989, 1991).

Coefficient of Variation

The coefficient of variation is calculated by dividing the standard deviation of the distribution by the mean of the distribution (Thompson et al., 1994, p. 248). It measures variability in the distribution around the mean observation (King, 1983; Verstegen & Salmon, 1989). Because the coefficient of variation is calculated by dividing the standard deviation by the mean, its value is always a decimal between zero and one. Smaller decimal values indicate less variation in the distribution; and, consequently, more equity in the distribution.

The coefficient of variation has been used in numerous studies of per-pupil revenue/expenditure equity (Bezeau, 1979; Cronk & Johnson, 1983; Goertz, 1983; Heinold, 1983; Hertet et al., 1994; Hirth, 1994; Johnson & Pillianayagam, 1991; Jones & Salmon, 1985; Kearney & Chen, 1989; King, 1983; Lake, 1983; Mark & Carruthers, 1982; Oesch & Paquette, 1995; Sample & Hartman, 1990; Stark et al., 1993; Stiefel et al., 1998; Verstegen, 1987, 1994, 1996; Verstegen & Salmon, 1989, 1991).

McLoone Index

The McLoone index was developed by Eugene McLoone in the1960s to measure expenditure disparity, but only the disparity below the central tendency (Hickrod et al., 1980). McLoone was a forceful supporter of the concept that "the only legitimate concern of the state is with the expenditure per pupil variation below some measure of central tendency." McLoone, and others, believed that high spending districts should be "allowed to move out in front as far as they want to go," and that the state's primary concern should be "bringing up the low spending districts" (Hickrod et al., 1980, p. 182). Accordingly, the McLoone index was designed to examine the bottom half of the distribution. The index is calculated as the ratio of the sum of all expenditures below the median to the sum of all expenditures below the median when brought up to the median level (Garris & Cohn, 1996; Hickrod et al., 1980; Hirth, 1994; Kearney & Chen, 1989; Oesch & Paquette, 1995; Thompson et al., 1994; Wood, Honeyman, & Bryers, 1990). The higher the index, the more equitable the distribution. Numerous studies have used the McLoone index to measure per-pupil revenue/expenditure equity (Hertert et al., 1994; Hirth, 1994; Johnson & Pillianayagam, 1991; Kearney & Chen, 1989; Prince, 1997; Sample & Hartman, 1990; Stark et al., 1993; Verstegen, 1987, 1994, 1996; Verstegen & Salmon, 1989, 1991).

Gini Coefficient and Lorenz Curve

The Gini coefficient was originally used by economists to measure income equality. It is designed to show how far the distribution is from providing each percentage of a population with an equal percentage of some variable (Thompson et al., 1994, p. 251). In the case of public school finance, the coefficient is concerned with providing each percentage of students with equal percentages of revenues (Odden et al., 1979; Kearney & Chen, 1989). G. Alan Hickrod has been the chief proponent of the use of the Gini coefficient as a measure of inequality in public school finance (Lows, 1984). He used the Gini coefficient in a longitudinal study of Illinois public schools for the period 1972-1981 to test wealth neutrality. In public school finance, wealth is defined as the ability of a school district to support the school with local property and/or income taxes (Thompson et al., 1994; Wood & Thompson, 1996). Wealth neutrality, or fiscal neutrality, is the relationship between the school district's wealth and the per-pupil expenditures of the school district (Hickrod et al., 1980). A funding program is considered "wealth neutral" if there is little or no relationship between the local district wealth and the local district expenditures per pupil. The Gini coefficient is calculated from a formula with the resultant value between zero and one. The smaller the value of the Gini coefficient then the more equitable the distribution of revenue or expenditures.

The Gini coefficient is more easily understood when graphically depicted by the Lorenz curve (Berne & Stiefel, 1984; Bezeau, 1979; Odden, 1992; Thompson et al., 1994). The Lorenz curve is a graph formed by plotting the cumulative percentage of enrollments against the cumulative percentage of revenues or expenditures. A 45-degree line represents perfect equity. In other words, an equivalent percentage of the students receive an equivalent percentage of revenue or benefit from an equivalent percentage of expenditures.

The Gini coefficient has been used in numerous studies of per-pupil revenue/expenditures (Bezeau, 1979; Brown, Ginsburg, Killalea, Rosthal, & Tron, 1978; Cronk & Johnson, 1983; Garris & Cohn, 1996; Hirth, 1994; Johnson & Pillianayagam, 1991; Jones & Salmon, 1985; Kearney & Chen, 1989; Mark & Carruthers, 1982; Oesch & Paquette, 1995; Prince, 1997; Sample & Hartman, 1990; Stark et al., 1993;Vertsegen, 1987, 1994, 1996; Verstegen & Salmon, 1989, 1991; Wood et al., 1990).

Court Challenges

Why has so much energy been concentrated on the study of public school finance? Public education is the largest area of state and local government spending in the United States. With almost one-fifth of the 1996 direct state and local government expenditures involved in public education, it is one of the most significant functions left principally to state and local governments after the rise of Great Society government and "cooperative federalism." Given the critical private and societal benefits that education produces, the availability of educational opportunities has generated considerable interest among policymakers, the public, and the courts. It is also one of the most important policy areas in which the courts have intervened (Moser & Rubenstein, 2002; Bosworth, 2001).

Over the years, a number of court cases have clarified and solidified the concept of equity in public school finance. Most of the public school finance litigation occurred because of perceived inequities in revenue distributions among school districts and the inability of the states' legislatures to correct the disparities (Camp & Thompson, 1988). In the framework of Berne and Stiefle, the issue was equity for students and the object of distribution was revenue/expenditures per pupil. Revenues and expenditures can be used interchangeably as objects of distribution because educational institutions tend to spend all funding that is available in pursuit of the educational mission (Bowen, 1980). The principles were horizontal equity, vertical equity, and equal opportunity.

The landmark Supreme Court case generally recognized as the seminal case that addressed equality of educational opportunity was *Brown v. Board of Education*. The Supreme Court of the United States was asked to determine the constitutionality of the practice of segregating white and black children in the public schools. The case was a direct challenge to the "separate but equal" doctrine adopted in an earlier case (*Plessy v. Ferguson*). At issue was the interpretation of Section 1 of the 14th Amendment to the U.S. Constitution that prohibited the states from denying to any person in their respective jurisdictions the equal protection of the laws. Chief Justice Earl Warren wrote for the Court concerning a child's opportunity for an education:

> Such an opportunity, where the state has undertaken to provide it, is a right which must be made available to all on equal terms. ...Does segregation of children in public schools solely on the basis of race, even though the physical facilities and other "tangible" factors may be equal, deprive the children of the minority group of equal educational opportunities? We believe that it does. (*Brown v. Board of Education*, 347 U.S. 483, 1954, p. 493)

The Court's decision emphasized the basic importance of education as a function of government and as an avenue for success in life.

> Today, education is perhaps the most important function of state and local governments. Compulsory school attendance laws and

> the great expenditures for education both demonstrate our recognition of the importance of education to our democratic society. It is required in the performance of our most basic public responsibilities, even service in the armed forces. It is the very foundation of good citizenship. Today it is a principal instrument in awakening the child to cultural values, in preparing him for later professional training, and in helping him to adjust normally to his environment. In these days, it is doubtful that any child may reasonably be expected to succeed in life if he is denied the opportunity of an education. (*Brown v. Board of Education*, 347 U.S. 483, 1954, p. 493)

The *Brown* decision put an end to legalized segregation in public education, but it was the Court's finding that education opportunities in the public schools must be made available to all on equal terms, that would serve as the primary basis for legal challenges to state school finance programs in the future.

Thinking that the time was right for a federal decision extending equality of educational opportunity to include fiscal equity, proponents filed a series of court cases that dealt with the issue of funding disparities among local school districts caused by state school funding formulas. Two cases filed in federal court in1968 challenged the state financing system for public schools based upon the 14th Amendment to the U.S. Constitution. In *Burrus v. Wilkerson* the plaintiffs charged that the apportionment of Virginia state funds created substantial disparities in educational opportunities among different counties in violation of the equal protection clause of the Fourteenth Amendment. A second case, *McInnis v. Shapiro*, challenged Illinois' system of financing the public schools of the state. Both cases were dismissed. The courts found the circumstances of the cases scarcely distinguishable with the two state's distribution of school funds being very similar. The absence of an acceptable measure of educational need presented the courts with a judicially unmanageable standard.

The landmark case in the federal courts dealing with the financing of public schools was *San Antonio School District v. Rodriguez*. Having learned from earlier federal cases, the plaintiffs argued key points that had been successful in broader litigation. They argued that the Texas funding system violated the federal equal protection clause because it discriminated against a class of poor and that students were denied their right to an education. The plaintiffs had two basic arguments: wealth as a suspect class and education as a fundamental right.

The Court rejected both arguments. It noted that wealth discrimination in prior cases had historically been confined by the Court to personal wealth, and that the class in *Rodriguez* was not one for which special protection is usually provided; that is, it was neither politically powerless, discrete, or an insular minority. The Court further noted that its historic application of wealth discrimination under strict scrutiny had been limited to absolute deprivation rather than relative differences. Consequently, the Court found no distinct suspect class and held that since no student was absolutely deprived of an education, fiscal inequalities were of only relative difference and not entitled to wealth suspectness (Thompson et al., 1994).

As to the plaintiffs' claims for fundamentality, the Court stated that it saw no more connection between education and the intelligent exercise of the right to vote and the right to free speech than it could find between housing, food, or other subsistence and the right to vote. The Court especially noted a difference between hindering a child from an education and a state aid scheme that, despite disparities, was an attempt to improve available offerings. The Court rejected strict scrutiny in the case and found that:

> Education, perhaps even more than welfare assistance, presents a myriad of "intractable economic, social, and even philosophical problems." Dandridge v. Williams, 397 U.S. at 487. The very complexity of the problems of financing and managing a state-wide public school system suggests that "there will be more than one constitutionally permissible method of solving them," and that, within the limits of rationality, "the legislature's efforts to tackle the problems" should be entitled to respect. *Jefferson v. Hackney*, 406 U.S. at 546-547. (*San Antonio Independent School District v. Rodriguez*, 411 U.S. 1, 1973, p. 42)

In *Burrus*, *McInnis*, and *Rodriguez*, it was the federal courts' consistent opinion that the equal protection clause of the Federal Constitution held no guarantees for an equal educational opportunity based on substantially equal expenditures per pupil. The *Rodriguez* decision made it clear to reformers that little support for equality of educational opportunity could be had at the federal level apart from the historically narrow application of race relations. The Court had sanctioned legislative prerogative and declared judicially unmanageable standards. The effect was to refocus reformers efforts in federal lawsuits and to turn their attention to state courts in hopes of finding greater sympathy for reform.

The California Supreme Court was the first state high court to strike down a state funding plan. In *Serrano v. Priest*, based on equal protection guarantees of the state and federal constitutions, the court ruled that the state education plan could not be a function of local property wealth. The case was decided in 1971, prior to *Rodriguez*, but was re-visited in 1976 in *Serrano II* (Chambers, 1996).

Although the federal claims in *Serrano* were invalidated by *Rodriguez*, the state claims were affirmed and it proved that constitutional challenges could be successful at the state level if not at the federal level. The *Serrano* case established three basic claims at the state level: fundamentality, wealth suspectness, and equal protection. "*Serrano* had an immediate and profound effect, sparking dramatic reform of state aid formulas in many states.... Although these reforms were later thought to have been a premature overreaction given later developments, *Serrano* was the impetus for reform as many states believed their own courts would adopt identical standards that would cause their formulas to fall before court scrutiny" (Thompson et al., 1994).

Reformers were further encouraged by a decision in New Jersey Supreme Court in 1973. In *Robinson v. Cahill*, the plaintiffs argued essentially the same claims as *Serrano* — the state school finance scheme violated federal and state equal protection laws and their fundamental right to education. Interestingly, the court refused to find for fundamentality, wealth suspectness, or equal protection; but still ruled for the plaintiffs based upon the education article of the state constitution that demanded a "thorough and efficient" system of education (Camp & Thompson, 1988, p. 222).

Although *Robinson* was a disappointment to many reformers, it was important for several reasons. Thompson, Wood, and Honeyman summarize it well:

> Although some critics believed *Robinson* had reversed some *Serrano*-like gains and had thus failed the important test of generalizing litigation across states, the decision of the state court in *Robinson* was equal to or greater in significance than either

> *Serrano* or *Rodriguez*. First, as the first test to follow the federal debacle in *Rodriguez*, *Robinson* was proof that plaintiffs could prevail at the state level. Second, while a ruling for fundamentality and suspectness would have strengthened reform, critics overlooked an enormous lever in that *Robinson* showed that school finance litigation did not necessarily have to turn on fundamentality. Third, *Robinson* found no need to rely on tenuous *Brown* analogies. Fourth, the genuine effect of *Robinson* was not in its failure to establish coveted claims, but rather in prevailing solely on the education article of the state constitution. Fifth, *Robinson* thereby opened wide the door to technical examination of state aid formulas wherein analysis could be centered on whether the aid scheme worked sufficiently well so as to not deny equal protection of state laws. In sum, *Robinson* greatly aided reform by helping shake free from high-risk litigation strategies that depended too heavily on ephemeral constitutional analysis. (Thompson et al., 1994, p. 278)

Results since *Serrano*, *Rodriguez*, and *Robinson* have been mixed. State supreme courts have ruled state aid plans unconstitutional in ten states since 1971. Conversely, state supreme courts have upheld state aid plans in sixteen states. The supreme courts in eight states have declared education to be a fundamental right, while the supreme courts in ten states have declared that it is not (Thompson et al., 1994).

Public school finance litigation has been important in advancing the concept of equitable distribution of funds to local districts regardless of the results in court (Camp & Thompson, 1988). Legislators often make changes in the state's funding models in anticipation of judiciary acts. Richard Rossmiller observes that:

> ...perhaps litigation, or the threat of litigation, may have helped produce school finance reforms that would not otherwise have been possible. One is tempted to observe that legislative bodies are more inclined toward significant reform during the period of time between when a case is filed and when it is decided. Perhaps this reflects a very human response on the part of legislative bodies. That is, they wish to avoid having a major state program ruled

> unconstitutional but once such a ruling is handed down, they are likely to "dig in their heels" and make only minimal changes. Thus, it might be good strategy for plaintiffs to delay a decision in a school finance case as long as possible in the hope that state legislative and executive branches will be more amenable to change before the case is decided. (Rossmiller, 1986, p. 8)

By 1992 nearly 70 individual pieces of litigation had been filed contesting the constitutionality of public school finance systems in 41 of the 50 states. Such litigation is expensive, and some have wondered what it has accomplished. Researchers have found that total revenues increased when there was litigation, regardless of the outcome; but that state revenues increased more when the plaintiffs won. Also, total funding increased more when the courts found education not to be a fundamental right, but state support increased more when the courts found education to be a fundamental right (Hickrod et al., 1992).

Concept of Equity in Higher Education Finance

The foregoing discussion of equity in public school finance, although not specifically stated, involved the evaluation of funding formulas. Formulas are used in almost every state in the allocation of funds to elementary and secondary school districts to attain equity in the distribution of funds (McKeown, 1996). Federal and state courts, as noted above, have issued many decisions regarding the equity and adequacy of public elementary and secondary funding formulas. Researchers, theorists, and policymakers have developed, analyzed, refined, and tested numerous alternative models. However,

> the goal of equality of educational opportunity through equalized funding has not been accepted in higher education ... Issues of student and taxpayer equity are not addressed often in the literature of higher education finance and certainly are not driving forces in state funding formulas despite the federal government's intervention by litigation in several states." (McKeown, 1996, p. 50)

Notwithstanding the fact that the goal of equality of educational opportunity through equalized funding has not been accepted in higher education as it has in elementary and secondary education, a majority of states have used funding formulas in budget development or in resource allocation to public higher education institutions to accomplish the purpose of providing an equitable distribution of available state resources (McKeown, 1996). A formula is the mathematical representation of needed resources for an institution as a whole or for a program at the institution (Boutwell, 1973). Formulas and their supporting cost analyses have generally been developed in response to two problems: "(1) the problem of securing an equitable distribution of funds among the institutions and (2) the problem of providing sufficiently objective budget justifications to satisfy state budget offices and legislatures" (Miller, 1964, p. 79).

Although the problem of securing an equitable distribution of funds among the institutions and the problem of providing sufficiently objective budget justifications to satisfy state budget offices and legislatures have been the primary catalysts for the development of formulas, several other advantages to their use have been recognized. Such advantages include: easier budget analysis and presentation, easier comparisons among institutions and activities, a more adequate level of support, ability to highlight basic policy questions, greater assurance that higher education will operate economically and efficiently, a more manageable budget process, and acceptability of the procedures (Miller, 1964).

Equity in Florida Community Colleges

One study was found that was particularly relevant to this study—a dissertation by Rhodella Brown. Her study was particularly relevant because she also studied the Florida Community College System and also considered the impact of performance funding. She evaluated the impact of the first year (1996-97) of performance funding on total state funding equity per Full Time Equivalent student by using statistical measures of equity prevalent in public school finance. She concluded that the statistical measures used to assess equity in public school studies were sensitive to changes in revenue and therefore, applicable to the community college setting. Further, her analysis of the data indicated that the degree of equity in the community college system decreased when performance-based funding was added to the funding process.

Summary

This chapter has presented the results of the literature review for the study. It provided information on performance funding methodologies in multi-institution community college systems as well as information on the principle of equitable funding distribution in multi-institution community college systems. Information was presented on performance funding in general, but the discussion was directed toward methodologies used in multi-institution community college systems, especially those methodologies used for Florida community colleges. Most of the equitable funding research that was found related to preK-12 education, however, the concepts and principles were found to be applicable to community colleges. Much of the research was concerned with the statistical measurements used to analyze the degree of equity in a funding program.

Studies were examined to identify which principles of equity were considered, how the principles were measured, and what variables were used in the assessment.

The results of the literature review indicate that performance funding concepts are gaining in popularity and that performance funding methodologies give little or no consideration to equity. Consequently, it seems worthwhile to study the impact of a particular system's performance funding program on the equitable distribution of the system's operating funds. Chapter 3 will describe the research methodology for such a study.

CHAPTER 3
RESEARCH METHODOLOGY

Introduction

The purpose of this study was to examine the change in fiscal equity in the state of Florida's multi-institution community college system for the first five years after the implementation of performance funding. To do so, data was collected on the distribution of general operating funds to Florida's community colleges for the fiscal years 1995-96 through 2000-01. The following questions were asked:

1. What were the changes in horizontal equity in the distribution of operating funds for Florida's 28 public community colleges after the implementation of performance-based funding?
2. What influence did performance-based funding have in the change in horizontal equity in the distribution of operating funds for Florida's 28 public community colleges?

Horizontal fiscal equity in the distribution of operating funds for Florida's 28 public community colleges was analyzed for the 6-year period. The analysis was conducted using horizontal fiscal equity criteria developed and validated for K-12 public school finance studies. These criteria have recently been extended to the analysis of community college per-student fiscal equity with some success (Brown, 1999; Harrell, 1992).

This study was designed to be non-experimental. Population data, obtained from the Florida Department of Education, Division of Community Colleges was used for analysis. The statistical measures developed for equity studies in public schools and recently applied to community colleges were used by the researcher to analyze the degree of horizontal equity on revenue distributions per full-time equivalent student (FTE) to the 28 public community colleges in Florida for six fiscal years beginning with 1995-96. The 1995-96 fiscal year was used as the beginning year of this study because it was the last year prior to the implementation of performance-based funding. The statistical measurements for equity were applied to operating funds revenue distributions to the colleges with performance funds included and with performance funds excluded so that the impact on equity of the performance funding could be evaluated separately.

Horizontal fiscal equity was examined in each of the six years using the range, restricted range, federal range ratio, coefficient of variation, Gini coefficient, and McLoone index. These statistics are described by Berne and Stiefel (1984) and Thompson et al. (1994). The Lorenz curve was plotted to represent the Gini coefficient for each set of data. The calculations were examined, analyzed, and compared.

The framework identified by Berne and Stiefel in 1979 for evaluating equity in public school systems asks four questions:

> 1. Equity for whom? Who are the different groups for whom school finance systems should be equitable?
>
> 2. Equity of what? What services, resources or more generally, objects, should be distributed fairly among these groups?
>
> 3. What are the different equity principles that can be used to determine whether the distribution is fair?
>
> 4. How should the degree of equity be measured?

Population of the Study

As noted in Chapter 2, the answer to the first question is usually one of two traditional choices: children and taxpayers. For purposes of this study, the answer selected was the equivalent of children—students. Children seemed inappropriate because community college students are adults, but "student equity" is more appropriate for a study of the Florida situation than "taxpayer equity" because public community colleges in Florida are primarily state supported without a local tax base. Accordingly, for purposes of this study, taxpayer equity was not considered to be an issue.

Given "equity for students" as the answer to the first question for this study, using Berne and Stiefel's framework, the answer to the second question might include objects from three general categories: inputs, outputs and outcomes. Outputs generally relate to student behaviors: results on achievement test scores, mastery of competency levels in different subject areas, passing of minimal competency tests, high school graduation, or any number of other measures. Outcomes refer to long-range results such as income, occupational status, personal satisfaction, ability to compete in the labor market, or status in life (Odden et al., 1979). While outputs and outcomes are acutely relevant to performance funding, very little research has been done to quantify and measure specific output and outcome indicators as they relate to equity. Most of the studies that have been done have focused on inputs (Berne & Stiefel, 1984). Accordingly, "inputs" was selected as the object for this study.

Inputs are the resources or services provided by the government. In traditional public school studies they have been defined as revenues or expenditures per child. But even when it is decided that revenues or expenditures per child is the object to be examined, an analyst still must decide whether revenues from all sources are to be included. Florida community colleges receive in excess of 70 percent of their operating funds from the state—62.3% from general revenue funds and 8.4% from lottery funds. Twenty-five percent of their operating funds come from student fees, leaving less than five percent from other sources (1999-2000 Cost Analysis Report).

Because revenue from sources other than student fees and state support was less than five percent of the system's total operating budget, it was disregarded as an input for this study. Student fees were included because fees vary by program, and equity in revenue distribution could be significantly impacted by the institution's program mix. Adult Education students pay no fees.

Section 240.35(7), Florida Statutes, reads "Each community college board of trustees shall establish matriculation and tuition fees, which may vary no more than 10 percent below and 15 percent above the fee schedule adopted by the State Board of Community Colleges, provided that any amount from 10 to 15 percent above the fee schedule is used only to support safety and security purposes." Although this statute allows for a small variation in fees among the colleges, most colleges have adopted fees near the maximum allowed. Consequently, there is little actual variation in the fees charged by different colleges for students in the same program categories.

With other sources of revenue eliminated from consideration, the remaining input to possibly be used as an object of equity analysis is student fees and state support. The colleges receive state support from numerous sources, but since this study is concerned with the distribution of operating dollars—fixed capital outlay appropriations, scholarship funds, and other categorical appropriations from the state were not included. Accordingly, this study examines the distribution of student fees and state operating fund support to the 28 community colleges in Florida as the object of equity for students. Since it has been found that revenues and expenditures can be used interchangeably as objects of distribution because educational institutions tend to spend all funding that is available in pursuit of the educational mission (Bowen, 1980), this study uses community college cost analysis expenditures from state sources and state appropriations to community colleges interchangeably.

Continuing with Berne and Stiefel's framework, the answer to the third question generally involves three principles: equal treatment of equals, unequal treatment of unequals, and equal opportunity. The first principle, equal treatment of equals, states that students who are alike should receive equal shares. This concept has become known in educational finance circles as horizontal equity (Berne, & Stiefel, 1984; Brown, 1999; Harrell, 1992; Jones, 1985). For purposes of this study, horizontal equity was defined as little or no dispersion (or inequality) in the distribution of student fees and state support per Full Time Equivalent (FTE) student for the 28 community colleges in Florida.

The second principle, unequal treatment of unequals, recognizes that students are different and requires that unequal students receive appropriately unequal treatment. This concept has become known in educational finance circles as vertical equity (Berne, & Stiefel, 1984; Brown, 1999; Harrell, 1992; Jones, 1985). While there is rarely agreement on identification of "unequals" in school finance, children with handicapping conditions, poverty background and limited English speaking ability are usually recognized as deserving unequal treatment. Particular school district characteristics, such as size and population sparsity are also recognized as legitimate reasons for differential treatment. For purposes of this study, vertical equity was not considered, except to the extent that recognition was given to differing resource demands for different programs. This study did give consideration to the different costs per FTE student by major program. An adjustment was also made in recognition of economies of scale for institutions above a certain size. A more detailed consideration of vertical equity for specific populations of students is a potential area for further research.

The third principle—equal opportunity—was not considered in this study.

The final question in Berne and Stiefel's framework is "How should the degree of equity be measured?" As noted in Chapter 2, numerous measures have been developed over the years to address horizontal equity (Berne & Stiefel, 1984; Goertz, 1983; Thompson et al., 1994). The repeated use of these statistical measures has firmly established a "well defined and generally accepted methodology for the measurement of equity" (Cronk & Johnson, 1983, p. 502). Six of these statistical measures have been applied to community college funding research. All six (the range, restricted range, federal range ratio, coefficient of variation, Gini coefficient, and McLoone index) were used for this study. The Lorenz curve was plotted to represent the Gini coefficient for each set of data.

Methodology

Community colleges in Florida received operating funds from the state from four major appropriations categories during the period analyzed: Community College Program Fund (CCPF) - General Revenue, CCPF - Lottery, Performance Based Budgeting (PBB), and the Workforce Development Education Fund (WDEF). As noted earlier, PBB funding, although called performance budgeting, was actually a performance funding program. In addition, 15 percent of the funds received from the WDEF were based upon performance calculations. The distribution of these funds to the 28 community colleges was examined for horizontal equity using six different statistical measures for each major program area for the six years involved in the study. The six statistical measures were described as the most frequently used (Berne & Stiefel, 1984; Thompson et al., 1994), well described, and generally accepted (Cronk & Johnson, 1983) measurements of dispersion.

Range

The range is a measure used to examine the spread of the per-student revenue/expenditure distribution. For each year in the study, the 28 community colleges were arranged in ascending order according to per-student revenue/expenditure. The range was calculated by simply subtracting the lowest per-FTE student cost value from the highest per-FTE student value. Therefore, RANGE = Highest X_i - Lowest X_i where X_i was the per-FTE student cost for the institution for a particular year. The smaller the value of the range, the better the equity (Thompson et al., 1994; Verstegen, 1996; Verstegen & Salmon, 1989). This particular statistic is limited because it is based upon only two observations, the highest and the lowest, and ignores all other observations between the highest and lowest (Thompson et al., 1994; King, 1983; Mark & Carruthers, 1982), however it gives a quick indication of changes in equity of a distribution. The range was calculated for each year with and without performance funding.

Restricted Range.

The restricted range is a refinement of the range. It examines the spread of the distribution by attempting to correct for outliers, ignoring the extreme highest and lowest observations. As with the range, the 28 community colleges were placed in ascending order according to per-FTE student costs. The highest observations (beyond the 95th percentile) and the lowest observations (below the 5th percentile) were disregarded. The calculation for the restricted range was the difference between the observation at the 95th percentile and the 5th percentile. Accordingly, $\text{RRANGE} = \text{Highest}_{95th\%} - \text{Lowest}_{5th\%}$. Again, the smaller the restricted range of the distribution, the greater the equity. However, as with the range, this measurement was based on two observations and ignored variations in the middle. The restricted range was calculated for each year with and without performance funding.

Federal Range Ratio

The federal range ratio was "originally designed as a federal test to measure whether states met federal wealth neutrality guidelines in distributing federal funds" (Thompson et al., 1994, p. 248). Described as the "federal measure of disparity" (Hickrod et al., 1980, p.182), the federal range ratio is calculated by dividing the restricted range by the revenue per pupil per district at the 5th percentile. By expressing essentially the same information as the restricted range statistic, only in terms of a ratio, the federal range ratio overcomes the inflation problem and is, consequently a “more acceptable statistic than range or restricted range” (Hirth, 1994, p. 174). The smaller the decimal calculated for the federal range ratio, the more equitable the distribution.

The federal range ratio was calculated for each year with and without performance funding.

Coefficient of Variation

The coefficient of variation is calculated by dividing the standard deviation of the distribution by the mean of the distribution (Thompson et al., 1994, p. 248). It measures variability in the distribution around the mean observation (King, 1983; Verstegen & Salmon, 1989). Because the coefficient of variation is calculated by dividing the standard deviation by the mean, its value is always a decimal between zero and one. Smaller decimal values indicate less variation in the distribution; and, consequently, more equity in the distribution.

The mean revenue per FTE student ($\bar{y}$) was obtained by taking the sum of all the colleges’ available funds and dividing by the total FTE in the system. Presented as a formula it is,

$$\bar{y} = \frac{\sum_{i=1}^{N} e_i r_i}{\sum_{i=1}^{N} e_i}$$

where e_i = number of students (FTE) for each college

r_i = per-student revenue for each college and N = number of colleges in the system

The coefficient of variation (CV) formula is $CV = \dfrac{\sqrt{\dfrac{\sum e_i(\bar{y} - y_i)^2}{E}}}{\bar{y}}$

where e_i = number of FTE students for the college

and E = total FTE for all colleges

The coefficient of variation was calculated on per-student funding for each year with and without performance funding.

McLoone Index

The McLoone index was developed by Eugene McLoone in the1960s to measure expenditure disparity, but only the disparity below the central tendency (Hickrod et al., 1980). McLoone was a forceful supporter of the concept that "the only legitimate concern of the state is with the expenditure per pupil variation below some measure of central tendency." McLoone, and others, believed that high spending districts should be "allowed to move out in front as far as they want to go," and that the state's primary concern should be "bringing up the low spending districts" (Hickrod et al., 1980, p. 182). Accordingly, the McLoone index was designed to examine the bottom half of the distribution. The index is calculated as the ratio of the sum of all expenditures below the median to the sum of all expenditures below the median when brought up to the median level (Garris & Cohn, 1996; Hickrod et al., 1980; Hirth, 1994; Kearney & Chen, 1989; Oesch & Paquette, 1995; Thompson et al., 1994; Wood et al., 1990). The higher the index, the more equitable the distribution.

Expressed as a formula, the McLoone index is $MI = \dfrac{\sum_{i=1}^{N} e_i r_i}{M * \sum_{i=1}^{N} e_i}$

where e_i = number of students (FTE) for each college

r_i = per-student revenue for each college

$\sum_{i=1}^{N} e_i r_i$ = total revenue of colleges below the median

N = number of colleges whose per-student revenue were below the median.

S = number of students (FTE) in each college whose revenue was below the median.

and M = median per-student revenue.

The McLoone index was calculated for each year with and without performance funding.

Gini Coefficient and Lorenz Curve

The Gini coefficient was originally used by economists to measure income equality. It is designed to show how far the distribution is from providing each percentage of a population with an equal percentage of some variable (Thompson et al., 1994, p. 251). In the case of public school finance, the coefficient is concerned with providing each percentage of students with equal percentages of revenues (Kearney & Chen, 1989; Odden et al., 1979). G. Alan Hickrod has been the chief proponent of the use of the Gini coefficient as a measure of inequality in public school finance (Lows, 1984). He used the Gini coefficient in a longitudinal study of Illinois public schools for the period 1972-

1981 to test wealth neutrality. In public school finance, wealth is defined as the ability of a school district to support the school with local property and/or income taxes (Thompson et al., 1994; Wood & Thompson, 1996). Wealth neutrality, or fiscal neutrality, is the relationship between the school district's wealth and the per-pupil expenditures of the school district (Hickrod et al., 1980). A funding program is considered "wealth neutral" if there is little or no relationship between the local district wealth and the local district expenditures per pupil. The Gini coefficient is calculated from a formula with the resultant value between zero and one. The smaller the value of the Gini coefficient, the more equitable the distribution of revenue or expenditures.

The Gini coefficient is more easily understood when graphically depicted by the Lorenz curve (Berne & Stiefel, 1984; Bezeau, 1979; Odden, 1992; Thompson et al., 1994). The Lorenz curve is a graph formed by plotting the cumulative percentage of enrollments against the cumulative percentage of revenues or expenditures. A 45-degree line represents perfect equity. In other words, an equivalent percentage of the students receive an equivalent percentage of revenue or benefit from an equivalent percentage of expenditures.

The formula used for the Gini coefficient is

$$\text{Gini Coefficient} = \frac{\sum_i \sum_j P_i P_j \left| X_i - X_j \right|}{2(\sum_i P_i)^2 \mu}$$

where $\sum_i \sum_j$ is the summation of all institutions i, j
from i = 1 to N and from j = 1 to N

N = the number of institutions in the system

P_i = the student FTE for institution i

P_j = the student FTE for institution j

μ = population mean per-student expense or revenue value

X_i = per-student expense or revenue for institution i

and X_j = per-student expense or revenue for institution j.

The Gini coefficient was calculated for each year with and without performance funding.

A Lorenz curve was used to graphically depict the Gini coefficient. A Lorenz curve is a cumulative frequency curve that compares two sets of ordinal, interval or ratio data. Lorenz curves demonstrate the degree of concentration or inequality of a variable, such as the inequality of income, the concentration of ethnic minorities, etc. In this case it depicts the inequality of revenue distribution relative to FTE students.

The horizontal axis indicates the percent increments of the number of full-time equivalent students (FTE) in the state attending community colleges. The vertical axis indicates the percent increments of total revenue distributed to the community colleges. Perfect equity in the funding formula would result in a straight 45-degree line signifying that 10% of the students received 10% of the revenue, 20% of the students received 20% of the revenue, 90% of the students received 90% of the revenue, etc. A funding distribution that was not equitable would result in a concave curve (sagging line) below the perfect 45-degree line (perfect-equity line). The Gini coefficient is the ratio of the area between the curve and the perfect-equity line to the total area beneath the perfect-equity line.

The closer the Lorenz curve is to the perfect line of equity, the better the equity of the distribution.

The study resulted in six univariate dispersion measures for the first year and twelve for each of the following five years—six for funding with performance and six for funding without performance. The results were compared and evaluated.

Summary

This chapter presented the research methodology of the study. The research was designed to evaluate horizontal fiscal equity changes in the distribution of operating funds for Florida's 28 public community colleges during the five years after the implementation of performance funding. The research design included the application of recognized horizontal fiscal equity criteria used in evaluating K-12 horizontal fiscal equity that have recently been successfully used to evaluate community college per-student fiscal equity (Brown, 1999; Harrell, 1992).

This study was designed to be non-experimental. Population data, obtained from the Florida Department of Education, Division of Community Colleges was used for analysis. The research methodology was designed such that the statistical measurements for equity could be applied to operating funds revenue distributions to the colleges with performance funds included and with performance funds separate so that the influence on equity of the performance funding could be evaluated.

Chapter 4 presents the results of the analysis of the data for the Florida Community College System for the 1995-96, 1996-97, 1997-98, 1998-99, 1999-2000, and 2000-2001 fiscal years.

CHAPTER 4
ANALYSIS OF DATA

Introduction

The purpose of this study was to examine the change in fiscal equity in the state of Florida's multi-institution community college system for the first five years after the implementation of performance funding. Statistical measures recognized in public school finance were used to estimate changes in horizontal equity on Florida's funding distribution for the 28 public community colleges after the implementation of performance-based funding. The study analyzed the degree of horizontal equity of state support and student fees per full-time equivalent student (weighted by program cost and institution size) for the 28 public community colleges in the state of Florida for the year before and for five years after the implementation of performance-based funding. State support for each of the six years included in the study consisted of funding from the state's General Revenue Fund and the Educational Enhancement Trust Fund (lottery proceeds). General Revenue appropriations for the community college system included funds for the Community College Program Fund (CCPF), the Workforce Development Education Fund (WDEF), and the Performance Based Incentive Program (more commonly referred to as Performance-Based Budgeting or PBB). Lottery funds were appropriated for the CCPF.

As explained in Chapter 3, only operating funds from the state and student fee revenue were considered in this study. Operating funds from the state included the Community College Program Fund (CCPF) - General Revenue, CCPF - Lottery, Performance Based Budgeting (PBB), and the Workforce Development Education Fund (WDEF). These were the major sources of operating dollars for the colleges and were the only sources that were relatively consistent from year to year. Other categorical appropriations for specific purposes were not included in the study.

The study was designed to be non-experimental. Population data used for analysis was for the Florida Community College System, a public, multi-institution system. Data was collected for a six-year period beginning in 1995-96, the year prior to the implementation of Performance-Based Budgeting. The State Board of Community Colleges governed the system during the period of analysis. The Florida Board of Education under the state's education reorganization program replaced the State Board of Community Colleges in July 2001. The community college system consisted of 28 public colleges (Florida Statutes §240.3031) having common definition, mission, and responsibilities (Florida Statutes §240.301). Data for this study was provided by the Florida Department of Education, Division of Community Colleges.

Performance funding was first implemented for the Florida Community College System in 1996-97 with the appropriation of $12 million for the Performance Based Incentive Program (more commonly referred to as Performance-Based Budgeting or PBB). In 1997-98, the Workforce Development Education Fund was created with the intent of allocating at least 15 percent of the funds based upon performance (Ch. 97-307, Laws of Florida).

Some time was required to develop the methodology for the workforce performance allocation, and it was not until the 1999-2000 fiscal year that a portion of the appropriation was based upon performance.

Full-time equivalent (FTE) enrollment used for analysis came from the Division of Community Colleges' FTE History File. Public community colleges in the system calculate full-time equivalent enrollment according to State Board of Education Rule 6A-14.076, Florida Administrative Code. The rule states that the "number of full-time equivalent students for the community college program fund is the college credits for which students register divided by forty (40) plus the hours of instruction for which students register in other instruction divided by nine hundred (900)." The 40-hour basis for calculating credit FTE is unique to Florida. For cost analysis purposes, the Division converts the FTE to 30 credit hour equivalents to make the data more comparable to other states. The 30 credit hour FTEs were used for this study.

Weights for the FTEs were obtained from the Division's Cost Analysis Reports. Different program areas have differing costs and differing fee revenues. Consequently, "equitable" operating funds would not be "equal" operating funds per un-weighted FTE. In order to make the FTEs more equal, the FTEs were weighted according to the cost per FTE in the Cost Analysis Reports. Unique costs were identified for seven major program areas: Advanced and Professional (A&P), Postsecondary Vocational (PSV), Postsecondary Adult Vocational (PSAV), Continuing Workforce Education (CWE), College Preparatory, Vocational Preparatory, and Adult Education. Adult Education (typically the least expensive program to operate) was assigned a weight of one, and the other program weights were determined for each year by dividing their cost by the cost for Adult Education. The average weight for each program area over the six-year period was used to weight each year's FTE.

In addition to the weights for program areas, weights were applied to "small schools" in recognition of diseconomies of scale relative to institutions with low overall enrollment. Small schools were defined as those institutions with less than 3,000 un-weighted FTEs. The process for determining the weight to be applied for small schools was very subjective. Weights were chosen to simply bring the funding levels for these small schools into the range of funding of the balance of the schools. In order to accomplish this objective, two different weights were used. One weight factor (1.5) was used for schools with un-weighted FTE below 1,550. Another factor (1.3) was used for schools with un-weighted FTE between 1,549 and 3,000. This researcher does not suggest that these factors are scientifically supported, or that they represent true equalization for funding of small schools. They were chosen simply because they made the per-FTE funding of the small schools appear reasonable when compared with other institutions. Since the purpose of the study was to view changes in equity over time, it was not as important to be precise on the small school factor as it was to be consistent.

The purpose of this chapter is to present the results of the analysis of the data. Two principle questions were asked:

1. What were the changes in horizontal equity in the distribution of operating funds for Florida's 28 public community colleges after the implementation of performance-based funding?
2. What influence did performance-based funding have in the change in horizontal equity in the distribution of operating funds for Florida's 28 public community colleges?

Equity Before and After the Implementation of Performance-Based Funding

The answers to the two research questions stated above were obtained through the application of recognized horizontal fiscal equity criteria developed and validated for K-12 public school finance studies. These criteria have recently been extended to the analysis of community college per-student fiscal equity with some success (Brown, 1999; Harrell, 1992). Data used in the analysis may be found in the Appendix following Chapter 5.

Range

The range is a measure used to examine the spread of the per-student revenue distribution. Operating funds per weighted FTE was calculated for each of the 28 community colleges by dividing the total operating funds by the cost-weighted FTE as explained previously. The range was calculated by subtracting the lowest per-FTE support amount from the highest per-FTE support amount. The smaller the value of the range, the better the equity of the funding formula (Thompson et al., 1994; Verstegen, 1996). The range was first calculated for each year from 1995-96 through 2000-01 using total operating funds available to the colleges. The results of the first calculation are displayed in Table 4-1.

Table 4-1

Range for Operating Funds per FTE With Performance Funds Included

Year	Range	Low	High
1995-96	1,223	2,591	3,814
1996-97	1,515	2,683	4,198
1997-98	1,319	3,072	4,392
1998-99	1,488	3,258	4,746
1999-2000	1,449	3,398	4,847
2000-01	1,690	3,414	5,104

The range was smallest for fiscal year 1995-96 which was prior to the implementation of performance-based funding. The range was largest for fiscal year 2000-01 which was the fifth year of Performance Based Budgeting (PBB) and the second year of Workforce Development Education performance funding. This increasing range calculation indicates that there was decreasing equity in the system after the implementation of performance-based funding. Although the variability in the observed range values was too great to conclude with 95% confidence that there was a linear relationship between the decreasing equity and time, it is clear that the ranges tend to be greater after the implementation of performance funding (See Figure 4-1). It is possible that there is a linear relationship, but that the degrees of freedom associated with the limited number of years in the study do not provide sufficient statistical power to draw that conclusion.

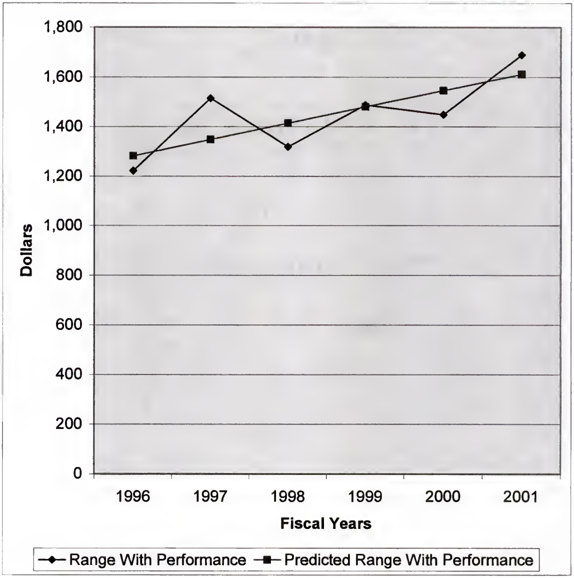

Figure 4-1 Range and Predicted Range for Operating Funds for Florida Community Colleges With Performance Included

To answer the second question—what influence did performance-based funding have in the change in horizontal equity in the distribution of operating funds for Florida's 28 public community colleges—two more calculations were made. Performance Based Budgeting was appropriated as additional funds beginning in 1996-97 with $12,000,000. Workforce Development Education performance began in 1999-2000 with the reallocation of 15% of the base funding for those programs. Consequently, to determine the impact of performance on the range calculations, PBB was subtracted completely from the operating funds, and workforce gains and losses were reversed-out. The range was recalculated as if performance had not been implemented. The results are displayed in Table 4-2.

Table 4-2

Range for Operating Funds per FTE Without Performance Funds

Year	Range	Low	High
1995-96	1,223	2,591	3,814
1996-97	1,489	2,656	4,145
1997-98	1,301	3,042	4,343
1998-99	1,476	3,247	4,723
1999-2000	1,369	3,397	4,767
2000-01	1,691	3,340	5,031

In every year following 1995-96, the range is less in Table 4-2 (performance excluded) than in Table 4-1 (performance included), indicating that, although equity was generally declining in the system over the five years both with and without performance funding included, there was a greater degree of inequity when performance funding was included than when it was excluded. The slope of the regression line was slightly less at 61.623 for the predicted range without performance funds compared to a slope of 65.829 for the predicted range with performance funds included. The greater the slope is, the greater the rate that equity is decreasing. Again, the degrees of freedom associated with the limited number of years in the study do not provide sufficient statistical power to conclude with 95% confidence that there was a linear relationship between the decreasing equity and time, or that the slope of the regression line was actually greater for the distribution with performance, but it is clear that the ranges tend to be greater after the implementation of performance funding (See Figure 4-2).

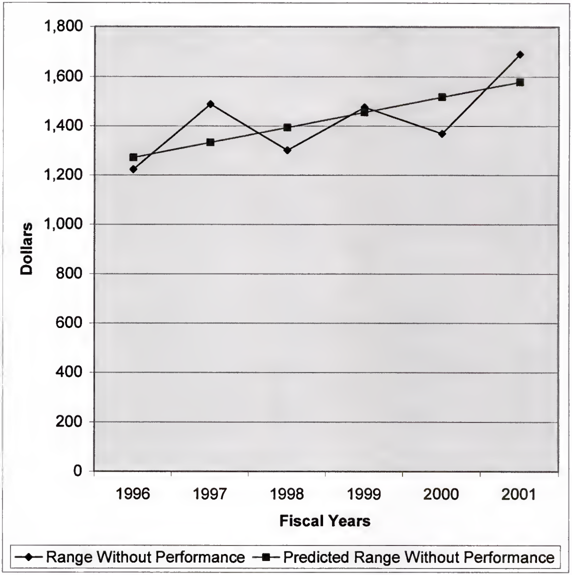

Figure 4-2 Range and Predicted Range for Operating Funds for Florida Community Colleges Without Performance Funds

Restricted Range

The restricted range is a refinement of the range. It examines the spread of the distribution by attempting to correct for outliers, ignoring the extreme highest and lowest observations. As with the range, operating funds per weighted FTE was calculated for each of the 28 community colleges by dividing the total operating funds by the cost-weighted FTE. In calculating the restricted range, the highest observations (beyond the 95th percentile) and the lowest observations (below the 5th percentile) were disregarded. The calculation for the restricted range was the difference between the observation at the 95th percentile and the observation at the 5th percentile. Accordingly, RRANGE = $\text{Highest}_{95th\%}$ - $\text{Lowest}_{5th\%}$. Again, the smaller the restricted range of the distribution, the greater the equity. The restricted range was first calculated for each year from 1995-96 through 2000-01 using total operating funds. The results of the first calculation are displayed in Table 4-3.

Table 4-3

Restricted Range for Operating Funds per FTE With Performance Funds Included

Year	Restricted Range	Low	High
1995-96	811	2,838	3,649
1996-97	841	3,161	4,002
1997-98	873	3,493	4,366
1998-99	1,154	3,519	4,673
1999-2000	1,307	3,514	4,821
2000-01	1,338	3,684	5,021

As was found with the range calculation, the restricted range was smallest for fiscal year 1995-96 prior to the implementation of performance-based funding and increased in each of the five subsequent years. The slope of the regression line for the restricted range was greater at 123.165 than it was for the range. The strength of the trend in the observed restricted range values was such that the researcher could conclude with 95% confidence that there was a linear relationship between the decreasing equity and time (See Figure 4-3).

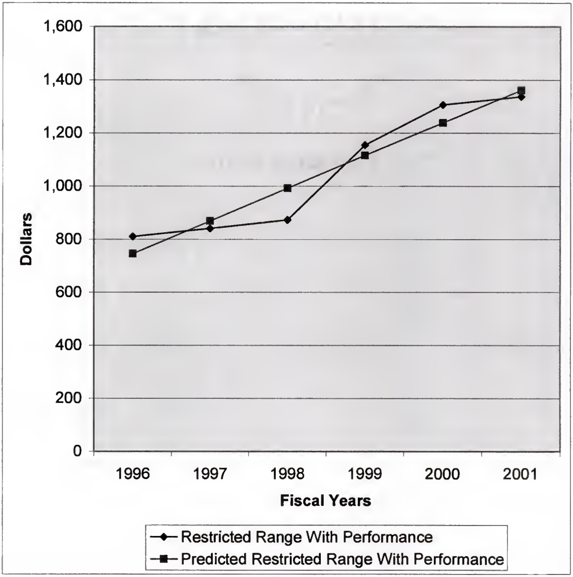

Figure 4-3 Restricted Range and Predicted Restricted Range for Operating Funds for Florida Community Colleges With Performance Included

The restricted range was also calculated without performance funds. The results are displayed in Table 4-4. In every year following 1995-96, the restricted range is less in Table 4-4 (performance excluded) than in Table 4-3 (performance included), again indicating that, although equity was generally declining in the system over the five years both with and without performance funding included, there was a greater degree of inequity when performance funding was included than when it was excluded.

Table 4-4

Restricted Range for Operating Funds per FTE Without Performance Funds

Year	Restricted Range	Low	High
1995-96	811	2,838	3,649
1996-97	825	3,122	3,948
1997-98	862	3,455	4,317
1998-99	1,148	3,506	4,654
1999-2000	1,305	3,434	4,739
2000-01	1,278	3,635	4,913

The slope of the regression line for the restricted range without performance was less at 115.956 than it was for the restricted range with performance (123.165), indicating that equity was decreasing more with performance funding than without it. The strength of the trend in the observed restricted range values without performance also was such that the researcher could conclude with 95% confidence that there was a linear relationship between the decreasing equity and time (See Figure 4-4).

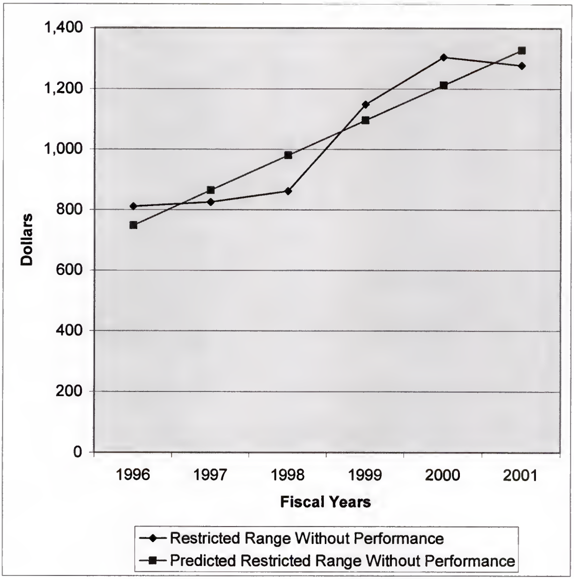

Figure 4-4 Restricted Range and Predicted Restricted Range for Operating Funds for Florida Community Colleges Without Performance Funds

Federal Range Ratio

The federal range ratio was calculated by dividing the restricted range value by the per-student revenue at the 5th percentile. The federal range ratio expressed how much larger the observation at the 95th percentile was than the observation at the 5th percentile (Hirth, 1994, p.174). The smaller the federal range ratio was, the greater the equity of the distribution. The federal range ratio was calculated on per-student revenue for the six fiscal years included in the analysis—first with performance funds included, and again with performance funds excluded. The results are displayed in Tables 4-5 and 4-6.

Table 4-5

Federal Range Ratio for Operating Funds per FTE With Performance Funds Included

Year	Federal Range Ratio
1995-96	0.28581
1996-97	0.26608
1997-98	0.25001
1998-99	0.32806
1999-2000	0.37194
2000-01	0.36312

Table 4-6

Federal Range Ratio for Operating Funds per FTE Without Performance Funds

Year	Federal Range Ratio
1995-96	0.28581
1996-97	0.26439
1997-98	0.24940
1998-99	0.32760
1999-2000	0.37990
2000-01	0.35160

The federal range ratio was smallest for fiscal year 1997-98—the second year of performance funding—indicating that the increased range and restricted range for 1996-97 and 1997-98 might have been the result of increased overall funding per FTE as opposed to an indication of declining equity in the system. However, the federal range ratio was much larger from 1998-99 through 2000-01, indicating a general trend toward less equity over the five-year period, and the ratio was lower without performance funds for every year except 1999-2000.

The slopes of the regression lines were nearly identical, indicating little difference in equity trends, and as with the range calculations the variability in the observed federal range ratios was too great to conclude with 95% confidence that there was a linear relationship between the decreasing equity and time (see Figures 4-5 and 4-6).

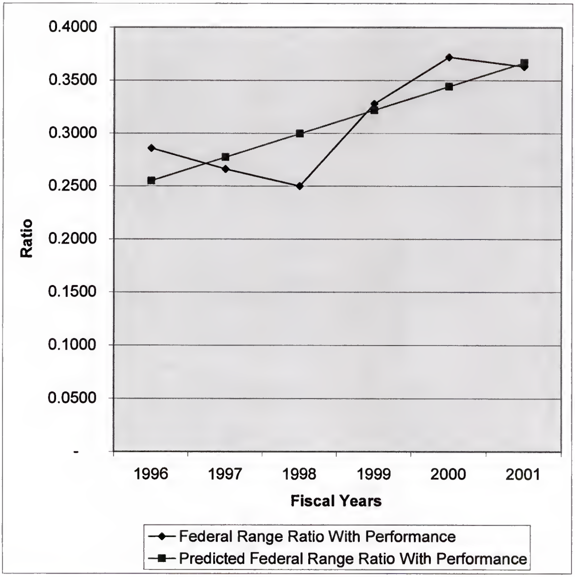

Figure 4-5 Federal Range Ratio and Predicted Federal Range Ratio for Operating Funds for Florida Community Colleges With Performance Included

Again this inability to conclude with 95% confidence could be a lack of statistical power resulting from the limited degrees of freedom associated with the number of years covered in the study rather than an actual absence of a linear relationship.

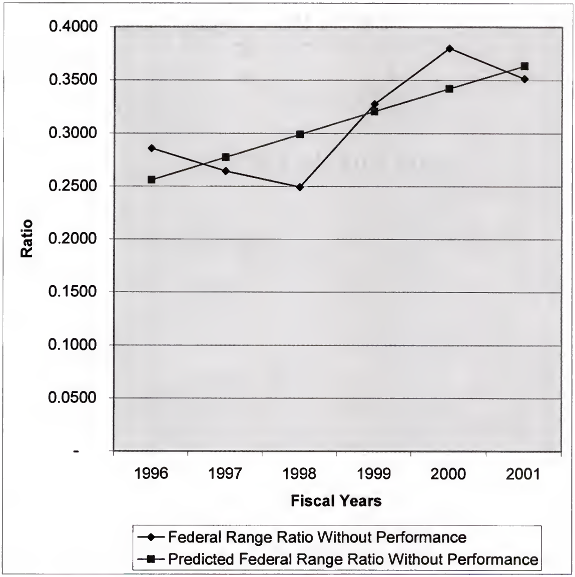

Figure 4-6 Federal Range Ratio and Predicted Federal Range Ratio for Operating Funds for Florida Community Colleges Without Performance Funds

Coefficient of Variation

The coefficient of variation is defined as the standard deviation divided by the mean of the distribution (Thompson et al., 1994; Odden, 1992). The coefficient of variation measures the relative variation in the distribution about the mean. The closer the coefficient of variation is to zero, the better the equity of the distribution. The coefficient of variation was calculated on per-student revenue for the six fiscal years included in the analysis—first with performance funds included, and again with performance funds excluded. The results are displayed in Tables 4-7 and 4-8.

Table 4-7

Coefficient of Variation for Operating Funds per FTE With Performance Funds Included

Year	Coefficient of Variation
1995-96	0.087770
1996-97	0.096410
1997-98	0.076380
1998-99	0.083330
1999-2000	0.088530
2000-01	0.088370

Table 4-8

Coefficient of Variation for Operating Funds per FTE Without Performance Funds

Year	Coefficient of Variation
1995-96	0.087770
1996-97	0.096070
1997-98	0.075900
1998-99	0.083100
1999-2000	0.089720
2000-01	0.089560

The results for the coefficient of variation calculations were somewhat different from the range, restricted range, and federal range ratio calculations.

The lowest values (both with and without performance funding) occurred in 1997-98—the second year of performance funding, but the highest values were observed in 1996-97—the first year of performance funding. The coefficient increased generally over the last three years of the study, but the values were still lower than for 1996-97. The slopes of the regression lines, both with and

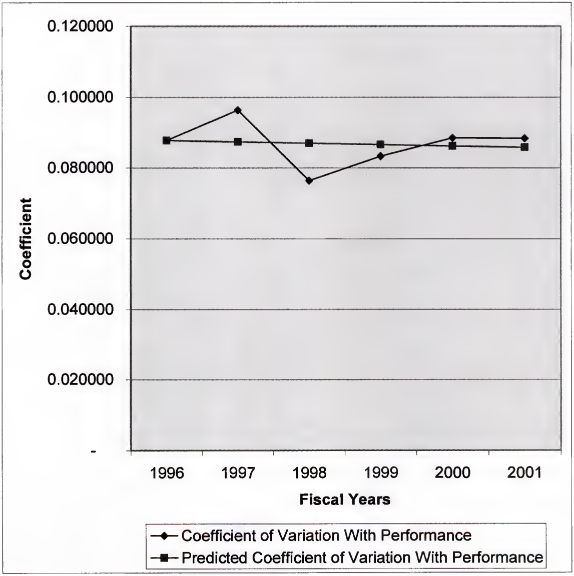

Figure 4-7 Coefficient of Variation and Predicted Coefficient of Variation for Operating Funds for Florida Community Colleges With Performance Included

without performance were slightly negative, indicating an increasing equity trend, but again, the variability in the observed values was too great over the short period of time to conclude with 95% confidence that there was a linear relationship between the increasing equity and time (see figures 4-7 and 4-8).

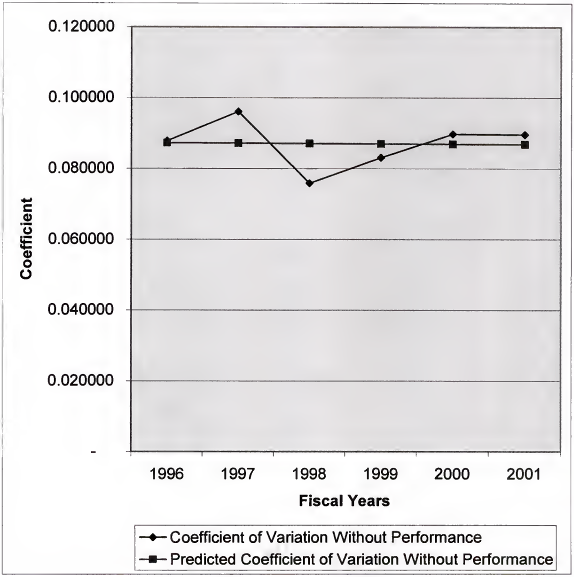

Figure 4-8 Coefficient of Variation and Predicted Coefficient of Variation for Operating Funds for Florida Community Colleges Without Performance Funds

McLoone Index

The McLoone index measures the degree of equity in the lower half of the distribution of per-student revenue. The McLoone index was calculated as the ratio of the sum of all revenues below the median to the sum of revenues that would be required if all revenues below the median were brought up to the median level. The closer the McLoone index is to one, the greater the equity of the lower half of the distribution. The McLoone index was calculated on the revenue data for the six fiscal years included in the analysis—first with performance funds included, and again with performance funds excluded. The results are displayed in Tables 4-9 and 4-10.

Table 4-9

McLoone Index for Operating Funds per FTE With Performance Funds Included

Year	McLoone Index
1995-96	0.90257
1996-97	0.91678
1997-98	0.95281
1998-99	0.91793
1999-2000	0.90004
2000-01	0.89451

Table 4-10

McLoone Index for Operating Funds per FTE Without Performance Funds

Year	McLoone Index
1995-96	0.90257
1996-97	0.91803
1997-98	0.95466
1998-99	0.91792
1999-2000	0.89216
2000-01	0.88666

The McLoone index indicated that funding equity for those institutions below the median funding level increased during the first two years of performance funding, and that performance funds actually improved the equity during those two years. However, equity for those institutions below the median funding level decreased during the next three years and the inclusion of performance funds resulted in a lower McLoone Index for those three years. The slopes of the regression lines with and without performance were very slightly negative (-0.00358 and -0.00554, respectively)—almost completely flat, indicating relative stability in equity in the lower half of the distribution. Again, the limited degrees of freedom coupled with the variability in the observations prohibited the researcher from concluding with 95% confidence that there was a linear relationship between equity and time (see Figures 4-9 and 4-10).

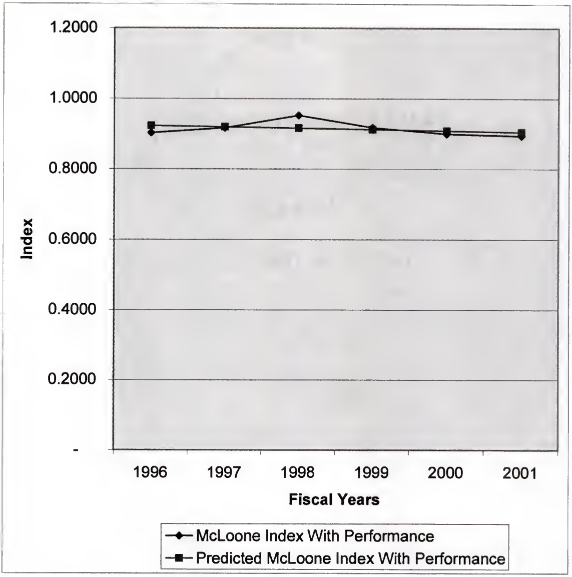

Figure 4-9 McLoone Index and Predicted McLoone Index for Operating Funds for Florida Community Colleges With Performance Included

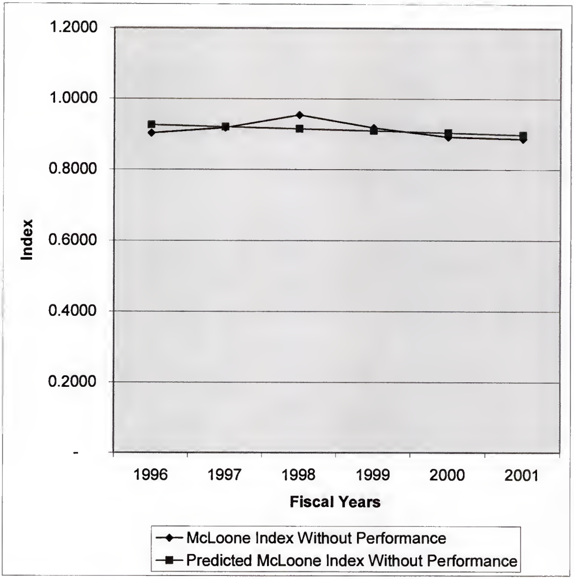

Figure 4-10 McLoone Index and Predicted McLoone Index for Operating Funds for Florida Community Colleges Without Performance Funds

Gini Coefficient

The Gini coefficient measures how well the portion of revenues available to the institution match with the institution's portion of students. The smaller the value of the coefficient is, the greater the equity in the distribution. The Gini coefficient was calculated on the revenue data for the six fiscal years included in the analysis—first with performance funds included, and again with performance funds excluded. The results are displayed in Tables 4-11 and 4-12.

Table 4-11

Gini Coefficient for Operating Funds per FTE With Performance Funds Included

Year	Gini Coefficient
1995-96	0.049037
1996-97	0.053646
1997-98	0.042524
1998-99	0.046328
1999-2000	0.049492
2000-01	0.049455

Table 4-12

Gini Coefficient for Operating Funds per FTE Without Performance Funds

Year	Gini Coefficient
1995-96	0.049037
1996-97	0.053617
1997-98	0.042365
1998-99	0.046233
1999-2000	0.049829
2000-01	0.049810

The low values for the Gini coefficient indicate that the funding for the Florida Community College System is generally equitable. The results for performance funding are mixed. The value of the coefficient is lower for the first three years if performance funds are excluded, but for the last two years, the value of the coefficient is lower with performance funds included. In all cases the differences are extremely slight (between .000029 and .000355).

The regression statistics, although of a different magnitude, were very similar to the results from the Coefficient of Variation. The lowest values (both with and without performance funding) occurred in 1997-98—the second year of performance funding, but the highest values were observed in 1996-97—the first year of performance funding. The coefficient increased generally over the last three years of the study, but the values were still lower than for 1996-97. The slopes of the regression lines, both with and without performance were slightly

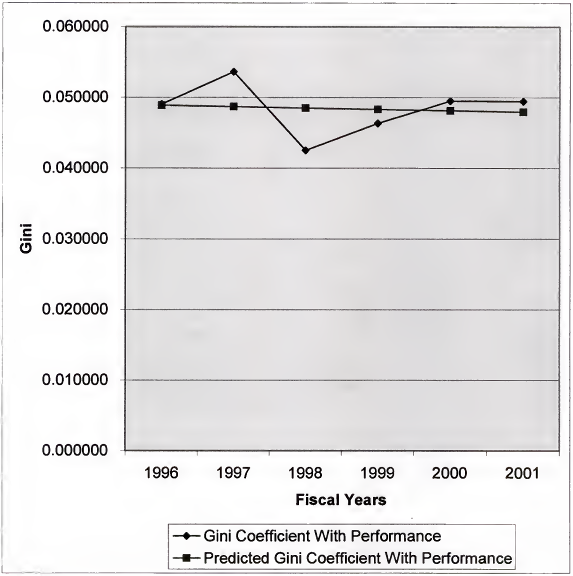

Figure 4-11 Gini Coefficient and Predicted Gini Coefficient for Operating Funds for Florida Community Colleges With Performance Included

negative, indicating an increasing equity trend, but again, the variability in the observed values was too great over the short period of time to conclude with 95% confidence that there was a linear relationship between the increasing equity and time (see figures 4-11 and 4-12).

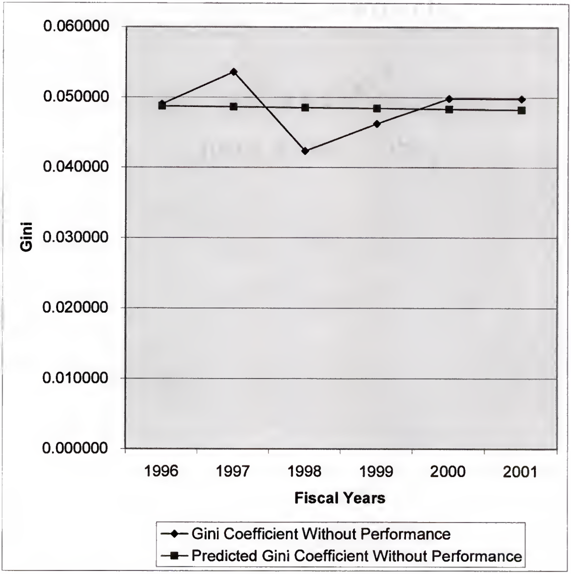

Figure 4-12 Gini Coefficient and Predicted Gini Coefficient for Operating Funds for Florida Community Colleges Without Performance Funds

Lorenz Curve

The Lorenz curve was used to provide a graphical illustration of the Gini coefficient. The colleges were sorted in ascending order for per-student revenue. The horizontal axis reflects the cumulative proportions of FTE students. The vertical axis reflects the cumulative proportions of total operating funds revenue distributed to the colleges. The 45-degree (diagonal) line represents perfect equity, indicating that 10% of the students would receive 10% of the revenue, 20% of the students would receive 20% of the revenue, etc. A funding distribution that is not equitable would result in a concave curve (sagging line) below the 45-degree perfect equity line. Figures 4-13 through 4-18 present the Lorenz curves for each year of the study.

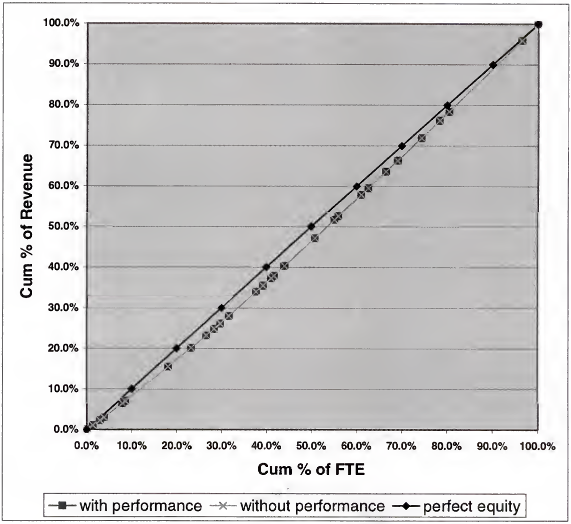

Figure 4-13 Lorenz Curve 1995-96

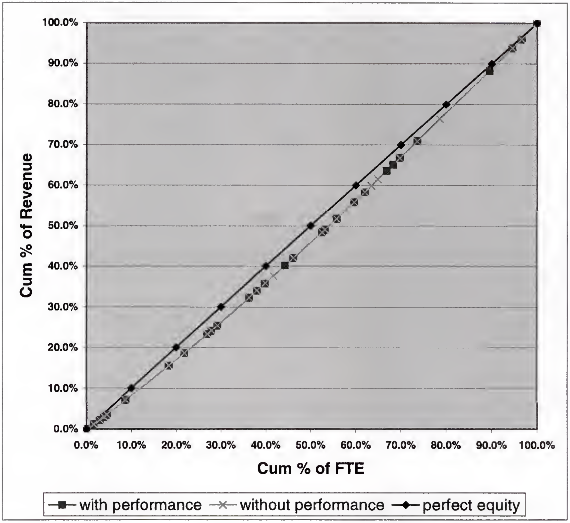

Figure 4-14 Lorenz Curve 1996-97

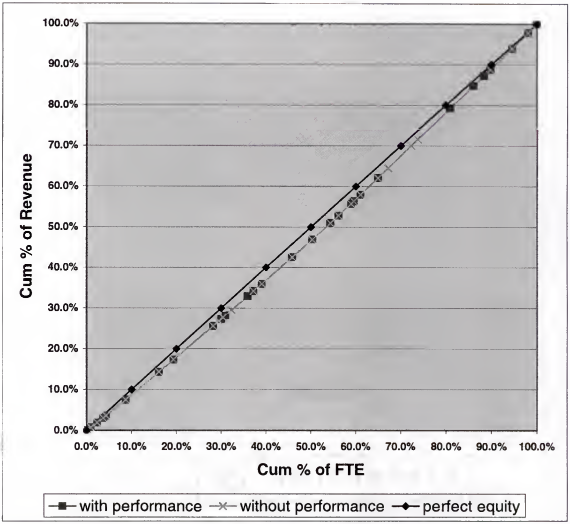

Figure 4-15 Lorenz Curve 1997-98

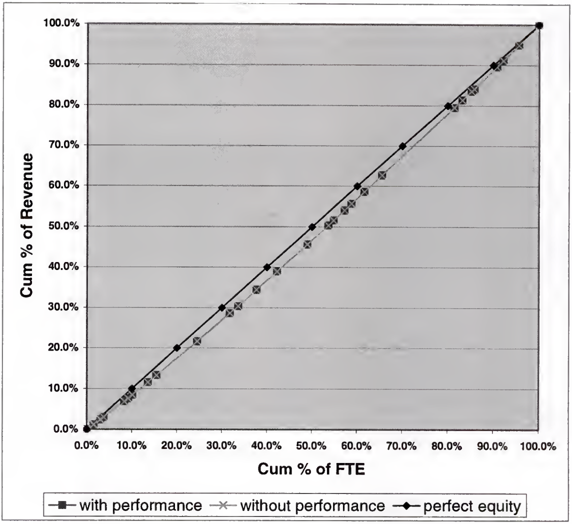

Figure 4-16 Lorenz Curve 1998-99

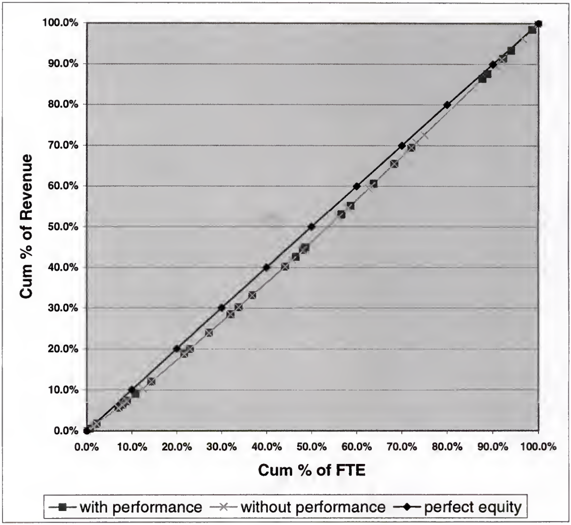

Figure 4-17 Lorenz Curve 1999-2000

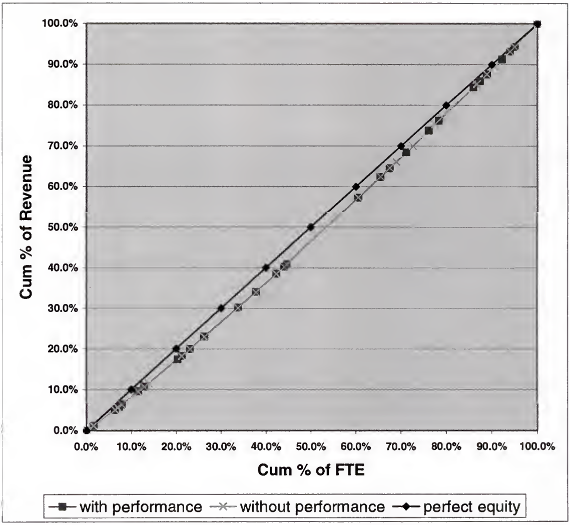

Figure 4-18 Lorenz Curve 2000-01

Summary

This chapter has described the analysis of the data for the Florida Community College System for the 1995-96, 1996-97, 1997-98, 1998-99, 1999-2000, and 2000-2001 fiscal years. The six statistical measures of equity were applied to the operating funds of the 28 institutions for each year—both with and without performance funds included. Chapter 5 will present the observations and conclusions of the study.

CHAPTER 5
OBSERVATIONS AND CONCLUSIONS

Introduction

Equitable treatment in funding public education is a long-held, highly revered goal that has come to be viewed as almost a fundamental right. Performance funding of education is a relatively young, but rapidly growing concept with strong support among many states' legislatures. The purpose of this study was to examine the interaction of these two concepts in a specific case. Specifically, this study examined the change in fiscal equity in the state of Florida's multi-institution community college system for the first five years after the implementation of performance funding and attempted to determine how the changes were influenced by the performance funding allocations. Statistical measures recognized in public school finance were used to estimate changes in horizontal equity on Florida's funding distribution for the 28 public community colleges following the implementation of performance-based funding. The study analyzed the degree of horizontal equity of operating funds per full-time equivalent student (weighted by program cost and institution size) for the 28 public community colleges in the state of Florida for the year before and for five years after the implementation of performance-based funding.

The statistical measures were applied to operating funds with and without performance funds included. The research methodology was non-experimental. Data for the 28 community colleges for the six years included in the study was obtained from the Florida Department of Education, Division of Community Colleges. Six recognized horizontal fiscal equity criteria developed and validated for K-12 public school finance were used in the analysis: range, restricted range, federal range ratio, coefficient of variation, McLoone index, and the Gini coefficient (Berne & Stiefel, 1984; Brown, 1999; Gurwitz, 1982; Harrell, 1992; Jordan & McKeown, 1980; Wood et al., 1990). Data used in the analysis may be found in the Appendix following Chapter 5.

The purpose of this chapter is to present the observations and conclusions based upon the analysis of the data in the study.

Revenue Equity Trend

The first research question—what were the changes in horizontal equity in the distribution of operating funds for Florida's 28 public community colleges after the implementation of performance-based funding—is addressed first.

Of the six statistical measures, only the restricted range indicated a trend in equity that could be supported statistically at the 95% confidence level. That trend was an increasing restricted range over time, indicating decreasing equity in the system. The range and federal range ratio results, although not statistically conclusive at the 95% confidence level, also indicated trends toward decreasing equity in the system. The slopes of the linear regression lines for the range and federal range ratio analyses were visually convincing, and it is possible that the failure to be statistically conclusive at the 95% confidence level resulted more from the limited degrees of freedom in the analyses than from an actual absence of a relationship. However, the slopes of the time series linear regression analyses for the coefficient of variation, McLoone index, and Gini coefficient indicated almost no change in equity during the years under study. Table 5-1 displays a summary of the results of the six tests for operating funds with performance included.

Table 5-1

Summary of Results of Six Statistical Tests on Equity Trends in the Distribution of Operating Funds in the Florida Community College System, 1995-96 through 2000-01

Statistical Test	Equity Trend Indicated	Conclusive at 95% Confidence Level?
Range	Decreasing	No
Restricted Range	Decreasing	Yes
Federal Range Ratio	Decreasing	No
Coefficient of Variation	No Change	No
McLoone Index	No Change	No
Gini Coefficient	No Change	No

Range-related statistics indicated a decreasing equity trend, but coefficient and proportion statistics indicated no change in equity. These mixed results will be addressed in more detail in the next section of this chapter.

Influence of Performance

The second research question—what influence did performance-based funding have in the change in horizontal equity in the distribution of operating funds for Florida's 28 public community colleges—required a duplication of all of the same tests for operating funds with performance funding excluded to determine whether the results would be different. The results were essentially the same. Of the six statistical measures, only the restricted range indicated a trend in equity that could be supported statistically at the 95% confidence level. That trend was an increasing restricted range over time, indicating decreasing equity in the system. The slope of the regression line for the restricted range for operating funds without performance was slightly lower than the slope for the restricted range for operating funds with performance, possibly indicating an influence by performance funding toward less equity, but the difference was not statistically significant.

The range and federal range ratio results without performance, mirrored the results with performance. They were not statistically conclusive at the 95% confidence level, but also indicated trends toward decreasing equity in the system.

The slopes of the time series linear regression analyses for the coefficient of variation, McLoone index, and Gini coefficient without performance also mirrored the results with performance. They indicated almost no change in equity during the years under study. Table 5-2 displays a summary of the results for the analyses of funding without performance funds. It reflects the same results as for the tests of funding with performance shown in Table 5-1.

Table 5-2

Summary of Results of Six Statistical Tests on Equity Trends in the Distribution of Operating Funds Without Performance Funds in the Florida Community College System, 1995-96 through 2000-01

Statistical Test	Equity Trend Indicated	Conclusive at 95% Confidence Level?
Range	Decreasing	No
Restricted Range	Decreasing	Yes
Federal Range Ratio	Decreasing	No
Coefficient of Variation	No Change	No
McLoone Index	No Change	No
Gini Coefficient	No Change	No

The use of the Lorenz curve to depict the results of the Gini coefficient analyses helps to explain these mixed results. As seen in Figures 4-13 through 4-18, overall equity in the system is good, and there is little difference between equity with performance and equity without performance. The plot for funding with performance is indistinguishable on the graph from the plot for funding without performance, and both are fairly close to the perfect equity line.

If the results indicated by the Lorenz curves are true (stable, equitable funding with or without performance), how do we explain the decreasing equity indicated by the range-related statistics, and how did the funding remain equitable when equity was not a part of the funding methodology design?

The answer to both questions may be simply circumstance. Funding for the Florida Community College System was relatively stable during the six years under examination. Operating Funds increased an average of only 6.9% per year. Table 5-3 summarizes the funding.

Table 5-3

Summary of Operating Funds in the Florida Community College System

Year	Operating Funds	Percent Change
1995-96	857,092,035	
1996-97	910,516,038	6.23%
1997-98	977,278,920	7.33%
1998-99	1,030,728,025	5.47%
1999-2000	1,070,695,386	3.88%
2000-01	1,152,998,059	7.69%

Because the Florida Community College System uses a “base-plus” approach to funding in which colleges receive their prior year funding level as a base with new funds added for various legislative initiatives, one would not expect significant changes in the equity of the distribution during periods in which increases in funding to the system are relatively small. Since the funding distribution to the colleges was relatively equitable in 1995-96 (before the implementation of performance funding), and since increases in funding were relatively small during the period, horizontal equity in the system should have remained relatively stable.

The appearance of decreasing equity based upon the range, restricted range, and federal range ratio was probably the result of overall increases in funding per FTE resulting from a combination of funding increases and enrollment decreases. Table 5-4 shows the changes in FTE and funding per FTE during the period.

Table 5-4

Summary of Changes in FTE and Funding per FTE in the Florida Community College System

Year	FTE	% Change in FTE	Funding per FTE	% Change in Funding per FTE
1995-96	257,722		3,326	
1996-97	251,224	-2.52%	3,624	8.98%
1997-98	248,022	-1.27%	3,940	8.72%
1998-99	247,810	-0.09%	4,159	5.56%
1999-2000	246,764	-0.42%	4,339	4.32%
2000-01	256,264	3.85%	4,499	3.69%

As enrollment decreased in 1996-97 through 1999-2000, the funding per FTE increased. If the funding per FTE increased proportionately for institutions at both the lower and upper ranges, the distance between them would increase, creating a higher range statistic.

The lack of any appreciable influence on the funding distribution by performance funds is likely due more to the small amount of funds involved than to any other factor. Performance funding ranged from a low of $4.8 million in 1998-99 to a high of $17.2 million in 2000-01. In terms of a percentage of total, the range is from a low of .47% to a high of 1.49%. Table 5-5 summarizes performance funding as a percentage of total funds for the years examined.

Table 5-5

Summary of Performance Funding as a Percentage of Total Funds

Year	Operating Funds	Performance Funds	Performance Funds as a Percent of Total
1995-96	857,092,035	0	0.00%
1996-97	910,516,038	12,000,000	1.32%
1997-98	977,278,920	12,000,000	1.23%
1998-99	1,030,728,025	4,800,000	0.47%
1999-2000	1,070,695,386	10,121,151	0.95%
2000-01	1,152,998,059	17,160,647	1.49%

These environmental factors (small changes in enrollment and total funding, increased funding per FTE, and very small amounts of performance funding) contributed to the mixed results of the statistical tests of equity.

Because the amount of funds involved in performance was too small to have any significant influence on the overall equity in the distribution of funds, an additional step was taken to examine the equity in the distribution of the performance funds alone. Because the total amount of funds involved in performance varied significantly from year to year, an analysis of any trend in the range and restricted range for performance funding alone would not be informative. However, because the Gini coefficient is an index of proportions, it is a good measure of the distribution of funds that vary significantly from year to year, and because the Lorenz curve graphically depicts the equity across the entire system, the combination of the Gini coefficient and the Lorenz curve was a good way to examine the equity in the distribution of performance funds alone.

The results of the Gini coefficient calculations for performance funds alone are displayed in Table 5-6. The Gini coefficient is an index between zero and one. The closer the index is to zero, the more equitable the distribution. The slope of the regression line for the Gini coefficient over time is slightly positive (indicating decreasing equity), but just as with most of the tests on total funding, statistical power was low. The variability of the observations coupled with the limited degrees of freedom prohibited the ability to conclude with 95% confidence that there was a linear relationship between the decreasing equity and time. Notwithstanding the statistical inconclusiveness of the time series trend analysis, it is clear that the last two years are much less equitable than the first three.

Table 5-6

Gini Coefficient for Performance Funding in the Florida Community College System

Year	Gini Coefficient
1996-97	0.15152842
1997-98	0.12966259
1998-99	0.12131331
1999-2000	0.37969019
2000-01	0.21104186

Figure 5-1 is a graph of the Lorenz curves for the performance funds for each of the five years included in the study. The graph of the Lorenz curves, as well as the table of the Gini coefficients clearly show that performance funding distributions to Florida community colleges were less equitable than distributions of total funds, and that the last two years of performance funding in the study were significantly less equitable than the first three years.

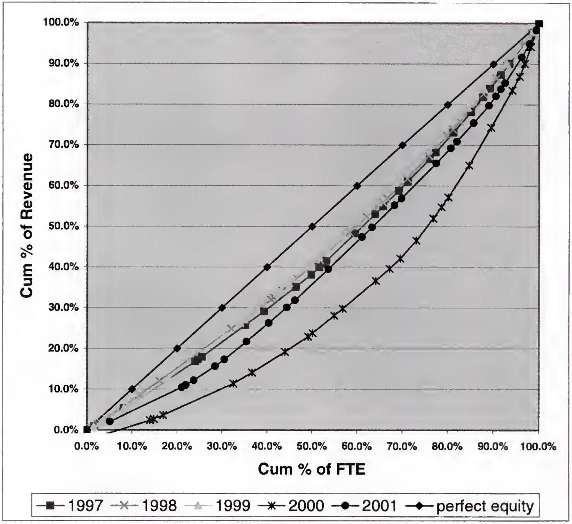

Figure 5-1 Lorenz Curve for Performance Funds Only

Conclusions and Implications of the Study

Although there was insufficient statistical power in most of the analyses to statistically support a trend of change (either increasing or decreasing) in fiscal equity in the state of Florida's multi-institution community college system for the first five years after the implementation of performance funding, the evidence indicated that, except for range-related statistics, equity within the system remained relatively consistent throughout the period. Implications for policymakers are that a base-plus funding methodology such as is used in Florida will tend to maintain a consistent level of equity given a relatively stable environment (small annual changes in enrollment and total funding). Policymakers considering such a base-plus approach would have to give due consideration to the existing level of equity in a system to determine whether it is an acceptable level to maintain. They would also have to give adequate consideration to the stability of funding and enrollment.

One problem with a base-plus approach is that, as observed here, it tends to increase range related equity measures. Mathematically, if the higher values in a distribution increase at approximately the same percentage as the lower values in the distribution, the distance between them will increase. While such changes in the range may not be significant enough over short periods of time to affect other equity statistics such as the coefficient of variation or the Gini coefficient, they will give the immediate impression of decreasing equity, and given sufficient time, could impact overall equity.

Equity in a base-plus funding methodology is also aggravated by significant changes in enrollment among institutions. For example, primarily because of the base-plus approach to funding, the fastest growing institution (in terms of enrollment) in the Florida system, Tallahassee Community College, had its funding per FTE change from $3,500 in 1995-96 to only $4,290 in 2000-01—an increase of only 23% over five years. During the same period of time, the second largest and second most rapidly declining institution (in terms of enrollment), Florida Community College at Jacksonville, had its funding per FTE change from \$2,976 to \$4,865—an increase of 63%. The largest institution (in terms of enrollment), Miami-Dade Community College, whose enrollment remained stable during the period had its funding per FTE change from \$3,649 to \$4,614—an increase of only 26% while the system as a whole increased from \$3,326 to \$4,499—an increase of 35%.

These seemingly significant changes in per FTE funding did not affect the range statistics because none of the three institutions were at the upper or lower end of the distribution and they had little impact on equity measures that test variances about means such as the coefficient of variation and the Gini coefficient because there are 28 institutions and no single institution's enrollment represents more than 16% of the system total. The second largest institution's enrollment is only about 8% of the system total. Large swings in funding per FTE for specific institutions do not necessarily adversely impact the overall equity of the system. Nonetheless, such institutional funding shifts fuel the perception of decreasing equity in the system. Institutional leaders attempting to use benchmarking as an administrative tool (Bender, 2002) will find such differences difficult to explain. If individual institutional funding equity is a priority, policymakers should consider a funding methodology that recognizes FTE changes.

As to the influence of performance funding on equity, the amount of performance-based funds distributed to Florida colleges during the period under study was not sufficient to conclusively affect any of the statistical tests. An examination of the Gini coefficient and Lorenz curves for the performance funds alone indicated that that performance funding distributions to Florida community colleges were less equitable than distributions of total funds, and that the last two years of performance funding in the study were significantly less equitable than the first three years. The implication for policymakers here is that, as long as performance funding remains a small percentage of overall funding it can be distributed in whatever manner produces the desired outcomes. However, if equity is a goal, and performance funding becomes a large percentage of overall total funding, policymakers must consider the fact that performance funds can adversely affect equity.

Further Study

The results of this study have suggested several areas for further research. These areas include:

- **Expand the study to give more attention to the movement of individual institutions within the distribution** – This study examined equity from the state's perspective. Equity was considered to be accomplished by distributing state support and student fees to institutions based upon their relative proportion of enrollment to the state total. Such consideration allows for some fairly significant changes in per-FTE funding for a single institution without affecting the statewide statistics. It would be interesting to examine in more detail how performance funding has affected particular institutions.
- **Extend the analysis to other systems with different environments** - This study examined funding in the Florida Community College System over a period of five years of performance funding. During that time, the

overall funding methodology was base-plus, enrollment and funding levels were relatively stable, and only a small percentage of total funding was allocated based upon performance. It would be informative to extend this type of analysis to other systems in which the overall funding methodology is not base-plus, and/or the enrollment and funding level environment is not stable, and/or the percentage of total funding allocated based upon performance is greater than was the case in this study.

- **Examine how performance funding has affected institutional behavior** - The performance aspect of this study was limited to performance funding's influence on the equitable distribution of funds to the colleges. It would also be informative to examine how performance funding has affected institutional behavior. Has performance funding improved the outcomes on which the performance funding distribution is based?
- **Conduct a follow-up study in Florida after new performance legislation has had time to impact the system** - The 2001 Legislature passed Senate Bill 1162 which created Section 229.007, Florida Statutes requiring the Florida Board of Education to work with the chancellors and each delivery system to develop proposals for performance-based funding, using performance measures established by the Legislature. The proposals must provide that at least 10 percent of the state funds appropriated for the community college system are conditional upon meeting or exceeding established performance standards. Such

recommendations for community colleges are to be considered by the 2005 Legislature with implementation in the 2005-2006 fiscal year. It would be interesting to revisit the Florida system in a few years to see what impact the increased percentage of performance funding will have.

- **Expand study to give greater consideration to vertical equity concepts** - This study did not consider vertical equity, except to the extent that recognition was given to differing resource demands for different programs through cost-weighting the FTE students by major program. An adjustment was also made in recognition of economies of scale for institutions above a certain size. A more detailed consideration of vertical equity for specific populations of students is a potential area for further research.

Implications for Higher Education Administration

The results of this study suggest that higher education policymakers should move cautiously when implementing performance-based funding—especially when such funding will represent a significant proportion of the total funding to institutions. Although performance funding is extremely popular with state policymakers, there is insufficient evidence to conclude whether it is effective. Forty-two percent of the State Higher Education Finance Officers surveyed (Burke & Minassians, 2001) indicated that it is too early to evaluate the effect of their performance funding programs. Only twenty-one percent claimed that their programs had improved performance to a great or considerable extent.

In addition, performance funding is by nature a disequalizing funding methodology. Individuals and organizations simply do not, by nature, perform equitably. Equity on the other hand, is a well-established concept that "encompasses justice, equality, humanity, morality, and right" (Alexander, 1982, p. 194). Policymakers have an obligation to treat taxpayers, students, and institutions in a fair and just manner.

The results of this study indicate that performance funding can be implemented in a manner that does not adversely impact equity as long as the amount of funds involved remains relatively small. However, the results suggest that large amounts of performance funding could have adverse effects on equity. The implication of this study for campus leaders is that they should stay involved in the policy making process. If they are concerned about the equitable distribution of funding, they must voice their concerns to state agency staff, legislative staff, and legislators while new funding methodologies are being developed. Studies have shown that the concept of performance funding is a trend and not a fad (Burke & Minassians, 2001). If campus leaders want to ensure equitable treatment in a performance funding environment, they must be vocal advocates of such. They should participate in the development of performance funding methodologies that will be effective in improving performance while not doing harm to the overall equity of the funding process.

APPENDIX
RAW DATA

This appendix presents the funding and enrollment history used in the study.

Appendix: 1995-96 Funding and FTE Data

COLLEGES	Gen.Rev. CCPF	Lottery CCPF	Student Fees	PBB	Workforce Funding	Total Funds Available	FTE Students	Weighted FTE
Brevard	$ 23,848,584	$ 4,315,687	$ 8,471,403			$ 36,635,674	9,636.97	10,311.41
Broward	33,741,802	7,507,795	17,343,657			58,593,254	17,069.60	17,333.09
Central Florida	9,429,521	2,244,776	4,165,427			15,839,724	4,609.37	4,889.44
Chipola	5,508,221	827,054	1,405,218			7,740,493	1,626.90	2,252.17
Daytona Beach	24,901,591	6,619,411	8,137,668			39,658,670	12,822.23	13,191.35
Edison	11,996,612	2,749,107	5,666,500			20,412,219	5,936.37	6,044.55
Fla. JC @ Jax	47,244,865	11,238,172	14,403,223			72,886,260	22,892.47	24,490.86
Florida Keys	3,981,538	539,461	986,439			5,507,438	1,028.33	1,645.08
Gulf Coast	8,774,364	2,032,207	3,465,810			14,272,381	4,254.97	4,532.06
Hillsborough	27,261,373	5,985,872	11,973,977			45,221,222	13,013.50	13,113.31
Indian River	19,104,738	4,892,064	6,014,885			30,011,687	9,678.67	10,574.32
Lake City	8,066,704	1,276,009	1,826,502			11,169,215	2,442.07	3,523.71
Lake-Sumter	4,279,824	718,686	1,278,065			6,276,575	1,538.17	2,356.29
Manatee	11,630,440	2,443,650	5,103,071			19,177,161	5,267.90	5,381.27
Miami-Dade	90,082,653	18,787,645	41,101,863			149,972,161	40,381.87	41,095.65
North Florida	3,646,839	518,620	606,219			4,771,679	1,023.77	1,666.29
Okaloosa-Walton	9,670,283	2,223,341	3,572,402			15,466,026	4,515.40	4,698.21
Palm Beach	22,320,249	5,218,956	10,954,526			38,493,730	10,928.73	11,276.80
Pasco-Hernando	8,035,935	1,788,081	2,986,301			12,810,317	3,646.03	3,917.31
Pensacola	24,279,064	4,493,721	6,421,639			35,194,424	8,898.63	9,228.31
Polk	8,813,006	1,819,638	3,485,323			14,117,967	3,893.83	4,053.41
Saint Johns River	5,981,815	1,278,987	1,787,015			9,047,817	2,719.73	3,492.64
Saint Petersburg	28,253,767	6,174,028	13,184,251			47,612,046	13,286.87	13,573.87
Santa Fe	20,471,994	4,696,167	9,941,090			35,109,252	9,829.57	10,069.84
Seminole	17,251,728	4,026,307	5,125,963			26,403,998	8,068.67	8,694.11
South Florida	7,658,454	1,565,985	1,177,274			10,401,712	2,781.03	3,975.56
Tallahassee	13,768,769	3,033,723	6,538,316			23,340,808	6,851.33	6,667.97
Valencia	28,022,760	6,874,850	16,050,516			50,948,126	15,532.50	15,672.78
Total	$ 528,027,493	$ 115,890,000	$ 213,174,542	$ -	$ -	$ 857,092,035	244,175.47	257,721.65

Appendix: 1996-97 Funding and FTE Data

COLLEGES	Gen.Rev. CCPF	Lottery CCPF	Student Fees	PBB	Workforce Funding	Total Funds Available	FTE Students	Weighted FTE
Brevard	$ 24,296,122	$ 4,617,854	$ 8,571,257	$ 596,557		$ 38,081,790	9,092.43	9,709.12
Broward	36,511,112	7,626,860	17,772,937	728,649		62,639,558	17,413.40	17,743.72
Central Florida	9,925,339	2,372,019	4,360,949	332,208		16,990,515	4,494.00	4,717.12
Chipola	5,625,194	817,590	1,391,208	110,746		7,944,738	1,677.27	2,320.48
Daytona Beach	26,566,686	7,149,423	8,414,670	423,857		42,554,636	12,571.90	12,968.21
Edison	13,550,047	2,814,270	5,953,094	401,452		22,718,863	5,786.20	5,859.11
Fla. JC @ Jax	48,904,957	11,572,541	15,300,885	933,445		76,711,828	22,678.53	24,213.24
Florida Keys	4,276,014	533,279	959,242	57,138		5,825,673	1,000.20	1,601.96
Gulf Coast	9,554,205	2,025,012	3,754,045	228,261		15,561,523	4,116.87	4,356.29
Hillsborough	29,114,713	5,965,233	12,009,546	667,765		47,757,257	12,170.53	12,219.94
Indian River	21,041,588	5,222,082	6,326,057	404,853		32,994,580	9,531.60	10,438.43
Lake City	8,184,031	1,261,385	1,715,868	189,365		11,350,649	2,264.73	3,275.50
Lake-Sumter	4,415,382	737,086	1,383,667	81,651		6,617,786	1,463.93	2,251.80
Manatee	12,094,700	2,415,678	5,196,300	271,451		19,978,129	4,953.00	4,992.12
Miami-Dade	95,187,192	19,216,994	42,232,834	1,387,287		158,024,307	39,244.23	39,880.73
North Florida	3,747,125	555,696	643,545	81,913		5,028,279	1,012.00	1,621.66
Okaloosa-Walton	9,848,662	2,197,838	3,677,594	209,532		15,933,626	4,307.77	4,449.82
Palm Beach	22,930,128	5,159,236	11,616,748	570,367		40,276,479	10,828.13	11,216.39
Pasco-Hernando	9,287,006	1,767,618	2,932,071	268,285		14,254,980	3,420.97	3,641.98
Pensacola	24,741,895	4,442,293	6,817,521	458,912		36,460,621	8,391.87	8,685.29
Polk	9,161,587	1,829,670	3,497,267	257,127		14,745,651	3,614.50	3,762.73
Saint Johns River	6,354,557	1,273,974	1,843,115	99,795		9,571,441	2,626.67	3,410.19
Saint Petersburg	29,887,101	6,103,394	13,385,298	921,238		50,297,031	12,420.40	12,638.60
Santa Fe	21,285,085	4,657,286	10,441,810	607,595		36,991,776	9,613.63	9,843.56
Seminole	18,129,887	4,110,084	5,496,661	359,306		28,095,938	8,046.87	8,707.51
South Florida	7,862,250	1,553,036	1,271,735	106,127		10,793,148	2,854.30	4,023.19
Tallahassee	14,114,583	3,031,453	6,880,113	433,749		24,459,898	6,833.47	6,653.47
Valencia	31,918,705	7,486,116	17,639,149	811,369		57,855,339	15,918.53	16,022.23
Total	$ 558,515,853	$ 118,515,000	$ 221,485,185	$ 12,000,000	$ -	$ 910,516,038	238,347.93	251,224.42

Appendix: 1997-98 Funding and FTE Data

COLLEGES	Gen.Rev. CCPF	Lottery CCPF	Student Fees	PBB	Workforce Funding	Total Funds Available	FTE Students	Weighted FTE
Brevard	$ 14,814,128	$ 4,256,045	$ 9,028,415	$ 652,586	$ 11,610,924	$ 40,362,098	8,976.80	9,564.73
Broward	22,693,693	7,029,296	19,382,003	690,077	16,805,918	66,600,987	17,878.17	18,344.69
Central Florida	4,631,050	2,186,171	4,449,489	317,239	6,535,974	18,119,923	4,271.73	4,445.13
Chipola	3,339,587	753,532	1,483,290	115,724	2,833,865	8,525,998	1,636.67	2,272.08
Daytona Beach	9,635,747	6,589,265	9,059,002	560,725	20,094,902	45,939,641	11,893.93	12,242.26
Edison	10,347,501	2,593,771	6,459,467	385,317	4,318,364	24,104,420	5,628.43	5,693.76
Fla. JC @ Jax	15,152,817	10,665,833	15,280,697	858,818	38,639,408	80,597,573	20,777.67	21,861.28
Florida Keys	2,274,637	491,497	1,049,154	49,311	2,351,702	6,216,301	940.90	1,509.49
Gulf Coast	4,921,034	1,866,352	4,264,540	200,724	6,041,285	17,293,935	4,304.23	4,560.32
Hillsborough	21,256,355	5,497,857	12,643,323	677,279	10,092,305	50,167,119	11,663.40	11,718.31
Indian River	7,528,820	4,812,931	6,659,519	412,626	18,554,160	37,968,056	10,005.63	10,870.31
Lake City	2,615,931	1,162,556	1,856,520	194,343	6,270,627	12,099,977	2,252.13	3,221.82
Lake-Sumter	3,344,693	679,335	1,476,273	70,237	1,587,379	7,157,917	1,511.37	2,329.72
Manatee	8,440,748	2,226,409	5,578,524	233,466	4,669,041	21,148,188	4,798.50	4,815.29
Miami-Dade	70,401,665	17,711,343	45,565,525	1,535,667	32,892,690	168,106,890	39,090.33	39,747.72
North Florida	2,103,769	512,157	659,683	62,414	2,136,814	5,474,837	972.60	1,568.52
Okaloosa-Walton	6,211,887	2,025,638	4,238,667	224,962	4,493,355	17,194,509	4,457.67	4,584.16
Palm Beach	15,049,954	4,755,010	12,436,112	574,882	10,067,628	42,883,586	10,810.37	11,175.86
Pasco-Hernando	4,730,342	1,629,125	3,046,565	270,948	5,400,386	15,077,366	3,348.23	3,549.60
Pensacola	12,544,175	4,094,240	7,256,385	433,842	13,909,020	38,237,662	8,485.03	8,757.94
Polk	5,679,534	1,686,315	3,771,102	236,457	4,323,844	15,697,252	3,640.27	3,762.75
Saint Johns River	5,392,134	1,174,158	2,151,303	111,574	2,561,311	11,390,480	2,536.60	3,326.55
Saint Petersburg	18,721,141	5,625,193	14,698,011	808,919	14,021,038	53,874,302	12,580.20	12,736.70
Santa Fe	10,822,017	4,292,388	11,392,805	595,114	12,335,878	39,438,202	9,721.90	9,987.49
Seminole	5,090,768	3,788,059	5,641,037	361,506	14,811,116	29,692,486	7,588.20	8,146.09
South Florida	1,204,039	1,431,355	1,298,597	108,218	7,111,451	11,153,660	2,493.07	3,467.20
Tallahassee	13,193,573	2,793,939	8,008,410	455,604	4,016,837	28,468,363	7,139.27	6,944.51
Valencia	25,618,868	6,899,579	19,717,411	801,421	11,249,912	64,287,191	16,852.43	16,817.23
Total	$ 327,760,607	$ 109,229,349	$ 238,551,830	$ 12,000,000	$ 289,737,134	$ 977,278,920	236,255.73	248,021.52

Appendix: 1998-99 Funding and FTE Data

COLLEGES	Gen.Rev. CCPF	Lottery CCPF	Student Fees	PBB	Workforce Funding	Total Funds Available	FTE Students	Weighted FTE
Brevard	$ 16,229,260	$ 3,853,569	$ 10,097,768	$ 259,506	$ 11,610,924	$ 42,051,027	9,076.60	9,653.86
Broward	27,424,658	6,364,566	21,094,697	309,620	16,805,918	71,999,459	17,575.03	18,052.56
Central Florida	5,662,355	1,979,434	5,138,070	113,836	6,535,974	19,429,669	4,231.63	4,400.59
Chipola	3,899,708	682,274	1,524,775	40,422	2,833,865	8,981,044	1,500.57	2,406.08
Daytona Beach	12,442,450	5,966,147	9,883,087	220,307	20,094,902	48,606,893	11,218.73	11,510.43
Edison	11,495,530	2,348,489	7,066,247	144,028	4,318,364	25,372,658	5,866.63	5,950.57
Fla. JC @ Jax	20,842,566	9,657,211	16,708,777	322,850	38,639,408	86,170,812	20,984.57	22,439.53
Florida Keys	2,500,070	445,018	1,076,086	18,314	2,351,702	6,391,190	890.77	1,434.57
Gulf Coast	5,713,721	1,689,859	4,441,349	88,014	6,041,285	17,974,228	4,246.60	4,499.57
Hillsborough	23,383,190	4,977,949	13,444,498	256,782	10,092,305	52,154,724	10,957.60	10,988.23
Indian River	9,377,989	4,357,793	7,645,135	154,144	18,554,160	40,089,221	10,433.57	11,392.08
Lake City	3,056,528	1,052,618	2,025,054	69,566	6,270,627	12,474,393	2,059.90	2,941.63
Lake-Sumter	3,653,918	615,093	1,645,848	29,132	1,587,379	7,531,370	1,556.83	2,077.68
Manatee	9,271,395	2,015,867	6,104,043	96,738	4,669,041	22,157,084	4,953.73	5,005.54
Miami-Dade	76,346,486	16,036,457	47,257,935	657,449	32,892,690	173,191,017	38,702.57	39,470.22
North Florida	2,280,861	463,724	1,011,207	31,540	2,136,814	5,924,146	1,090.07	1,783.51
Okaloosa-Walton	6,767,163	1,834,082	4,592,148	83,721	4,493,355	17,770,469	4,510.90	4,642.19
Palm Beach	17,574,099	4,305,349	14,289,425	224,919	10,067,628	46,461,420	10,915.93	11,258.66
Pasco-Hernando	5,293,971	1,475,066	3,602,803	102,135	5,400,386	15,874,361	3,258.90	3,455.21
Pensacola	13,738,954	3,707,066	7,800,468	164,672	13,909,020	39,320,180	8,107.17	8,413.43
Polk	6,233,144	1,526,848	4,248,839	89,909	4,323,844	16,422,584	3,682.87	3,815.78
Saint Johns River	6,248,907	1,063,123	2,342,946	37,341	2,561,311	12,253,628	2,797.40	3,734.77
Saint Petersburg	20,942,343	5,093,243	15,742,114	300,967	14,021,038	56,099,705	12,038.50	12,324.86
Santa Fe	12,268,501	3,886,475	12,834,175	237,679	12,335,878	41,562,708	9,891.63	10,147.10
Seminole	6,996,097	3,429,839	6,764,499	167,339	14,811,116	32,168,890	7,821.33	8,495.44
South Florida	2,106,392	1,295,998	1,676,980	44,495	7,111,451	12,235,316	2,709.40	3,754.93
Tallahassee	14,907,015	2,529,728	9,277,304	165,744	4,016,837	30,896,628	7,291.17	7,121.82
Valencia	29,163,454	6,247,115	22,133,888	368,831	11,249,912	69,163,200	16,591.60	16,639.44
Total	$ 375,820,725	$ 98,900,000	$ 261,470,166	$ 4,800,000	$ 289,737,134	$ 1,030,728,025	234,962.20	247,810.26

Appendix: 1999-2000 Funding and FTE Data

COLLEGES	Gen.Rev. CCPF	Lottery CCPF	Student Fees	PBB	Workforce Funding	Total Funds Available	FTE Students	Weighted FTE
Brevard	$ 17,038,769	$ 3,708,232	$ 9,809,071	$ 383,499	$ 11,776,251	$ 42,715,822	8,655.63	9,243.62
Broward	28,377,993	6,124,527	23,707,039	543,342	16,777,956	75,530,857	17,606.60	17,955.34
Central Florida	6,009,321	1,904,780	5,778,555	127,181	6,993,860	20,813,697	4,179.33	4,341.26
Chipola	4,231,993	656,542	1,647,469	44,340	2,878,242	9,458,586	1,534.43	2,474.71
Daytona Beach	13,053,481	5,741,135	9,608,530	246,391	20,285,116	48,934,653	11,464.00	11,830.23
Edison	11,974,894	2,259,916	6,950,530	249,787	4,318,833	25,753,960	5,788.03	5,874.50
Fla. JC @ Jax	22,649,525	9,292,991	16,511,441	523,297	38,396,589	87,373,843	18,295.73	19,638.89
Florida Keys	2,652,482	428,234	1,083,220	18,528	2,158,049	6,340,513	892.70	1,432.46
Gulf Coast	6,091,288	1,626,126	4,642,158	123,368	6,201,008	18,683,948	4,210.00	4,467.26
Hillsborough	24,267,400	4,790,206	14,771,982	506,529	10,514,493	54,850,610	11,312.70	11,378.37
Indian River	10,138,800	4,193,439	7,962,429	166,976	19,332,059	41,793,703	10,859.57	11,894.42
Lake City	3,284,543	1,012,919	2,036,827	42,340	6,548,362	12,924,991	1,891.23	2,726.07
Lake-Sumter	3,961,665	591,895	1,765,648	50,190	1,570,221	7,939,619	1,634.37	2,178.69
Manatee	9,717,486	1,939,839	6,487,673	179,589	4,583,568	22,908,155	5,062.53	5,079.54
Miami-Dade	78,886,268	15,431,644	52,759,020	1,315,255	32,892,690	181,284,877	38,097.43	38,448.95
North Florida	2,435,608	446,235	1,043,129	27,551	2,107,241	6,059,764	1,099.77	1,783.35
Okaloosa-Walton	7,125,680	1,764,910	4,500,372	150,769	4,515,967	18,057,698	4,531.80	4,690.59
Palm Beach	18,296,538	4,142,973	14,389,810	487,855	14,667,393	51,984,569	11,230.33	11,304.38
Pasco-Hernando	5,584,716	1,419,434	3,570,409	106,310	5,712,491	16,393,360	3,214.10	3,382.40
Pensacola	14,426,996	3,567,255	8,442,334	216,588	13,792,459	40,445,632	8,234.33	8,464.18
Polk	6,611,796	1,469,263	4,694,987	127,776	4,539,789	17,443,611	3,832.80	3,969.12
Saint Johns River	6,490,598	1,023,027	2,707,467	93,291	2,503,309	12,817,692	3,073.90	3,200.62
Saint Petersburg	22,041,468	4,901,152	16,828,360	531,855	13,866,059	58,168,894	12,327.03	12,677.04
Santa Fe	12,937,479	3,739,897	12,927,260	395,970	12,214,157	42,214,763	10,110.20	10,379.65
Seminole	7,458,991	3,300,483	7,371,874	170,827	15,089,020	33,391,195	7,958.13	8,666.86
South Florida	2,431,276	1,247,120	1,661,638	72,563	7,281,813	12,694,410	2,659.43	3,665.02
Tallahassee	15,255,388	2,434,320	9,769,867	418,529	3,901,664	31,779,768	7,728.27	7,584.33
Valencia	30,376,168	6,011,506	23,604,506	753,536	11,190,485	71,936,201	18,043.03	18,032.09
Total	$ 393,808,610	$ 95,170,000	$ 277,033,600	$ 8,074,032	$ 296,609,144	$ 1,070,695,386	235,527.43	246,763.94

Appendix: 2000-01 Funding and FTE Data

COLLEGES	Gen.Rev. CCPF	Lottery CCPF	Student Fees	PBB	Workforce Funding	Total Funds Available	FTE Students	Weighted FTE
Brevard	$ 18,080,338	$ 4,042,142	$ 10,918,015	$ 434,047	$ 12,143,458	$ 45,618,000	8,883.37	9,477.25
Broward	29,931,658	6,597,611	28,106,126	543,564	17,585,685	82,764,644	18,865.20	19,183.78
Central Florida	6,250,670	2,015,516	6,117,914	150,125	7,414,723	21,948,948	4,236.97	4,390.41
Chipola	4,288,421	695,149	1,813,255	65,444	3,094,296	9,956,565	1,513.10	2,432.16
Daytona Beach	14,264,798	5,955,666	10,400,014	238,693	20,609,328	51,468,499	11,219.50	11,611.51
Edison	13,129,377	2,477,404	7,330,821	247,153	4,475,665	27,660,420	5,762.63	5,690.39
Fla. JC @ Jax	24,561,978	9,748,622	20,717,541	551,446	39,316,102	94,895,689	18,286.83	19,506.46
Florida Keys	2,741,898	444,366	1,212,431	22,856	2,118,383	6,539,934	914.80	1,467.02
Gulf Coast	7,066,331	1,733,542	5,038,355	146,234	6,261,792	20,246,254	4,292.47	4,545.34
Hillsborough	25,197,277	5,231,237	17,037,959	443,684	10,869,183	58,779,340	12,433.20	12,642.15
Indian River	11,967,705	4,338,824	8,653,480	216,229	19,711,217	44,887,455	11,108.47	12,185.73
Lake City	3,398,727	1,049,784	2,252,060	56,310	6,800,441	13,557,322	1,889.50	2,700.02
Lake-Sumter	4,560,107	635,595	2,077,020	62,802	1,600,463	8,935,987	1,756.10	2,337.69
Manatee	10,028,162	2,096,206	7,723,550	213,038	4,651,416	24,712,372	5,235.77	5,221.51
Miami-Dade	81,056,811	16,576,825	56,570,068	1,230,432	33,109,399	188,543,535	40,222.47	40,864.21
North Florida	2,523,659	470,223	1,072,091	28,348	2,370,324	6,464,645	1,022.37	1,659.09
Okaloosa-Walton	7,623,958	1,896,183	5,050,199	186,952	4,632,488	19,389,780	4,591.83	4,698.77
Palm Beach	19,668,453	4,567,745	17,072,135	452,472	19,590,711	61,351,516	12,479.43	12,656.48
Pasco-Hernando	5,798,568	1,511,997	4,073,584	119,479	6,165,265	17,668,893	3,443.47	3,628.66
Pensacola	14,823,116	3,755,837	9,090,974	260,185	14,272,166	42,202,278	8,266.77	8,502.65
Polk	7,416,953	1,580,517	5,266,263	157,640	4,779,895	19,201,268	3,795.53	3,926.41
Saint Johns River	7,242,895	1,104,255	2,716,010	117,853	2,666,757	13,847,770	3,295.63	3,497.25
Saint Petersburg	25,309,621	5,364,234	19,689,502	571,392	14,232,487	65,167,236	12,408.73	12,768.34
Santa Fe	13,340,548	4,084,665	14,422,634	393,889	12,500,755	44,742,491	10,066.53	10,280.85
Seminole	8,464,969	3,449,221	8,755,842	187,441	15,980,416	36,837,889	8,631.67	9,341.31
South Florida	2,707,561	1,310,300	1,911,034	59,778	7,514,438	13,503,111	2,873.37	3,955.70
Tallahassee	16,011,713	2,798,730	11,797,314	439,394	4,106,596	35,153,747	8,283.03	8,193.67
Valencia	31,663,980	6,667,604	26,111,106	721,954	11,787,826	76,952,470	18,779.73	18,898.87
Total	$ 419,120,252	$ 102,200,000	$ 312,997,298	$ 8,318,834	$ 310,361,675	$ 1,152,998,059	244,558.47	256,263.68

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BIOGRAPHICAL SKETCH

Gary William Yancey was born in rural northern Alabama on April 30, 1950, but his family moved to Miami before his first birthday. He has been a resident of Florida ever since. He attended elementary school in Miami, but moved to Tallahassee in the summer before the 8th grade. He attended Leon County High School—graduating in 1968. He received his bachelor's degree in accounting from Florida State University in 1975, and received his Certified Public Accountant license in 1976.

Gary began his career with the Florida Auditor General. His audit responsibilities included the Department of Education, Florida State University, and two community colleges. It was during this time that he developed his concern for public higher education and his particular interest in funding models.

He began his community college career in 1981 as business officer of North Florida Junior College in Madison, Florida. While serving as business officer at North Florida, Gary completed his master's degree in business administration at Florida State University.

Gary's entire career since 1981 has been in the Florida Community College System. He moved to Daytona Beach Community College in 1989 as Associate Vice President for Finance, and became Chief of the Bureau of Financial and Business Services for the Division of Community Colleges in 1997 where he has been instrumental in the development of the new Resource Allocation Model for Florida community colleges.

Throughout his career, Gary has been active in civic and professional organizations and has received special recognition from Community College Business Officers International and the Futures Assembly.

He lives in Tallahassee with his wife of 31 years. His three sons are grown and he has one granddaughter.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Dale F. Campbell

Dale F. Campbell, Chair
Professor of Educational Leadership,
Policy and Foundations

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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Interim Associate Dean

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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This dissertation was submitted to the Graduate Faculty of the College of Education and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Education.

December, 2002

Dean, College of Education

Dean, Graduate School

General Audience Abstract

DISSERTATION TITLE: FISCAL EQUITY CHANGE IN THE FLORIDA COMMUNITY COLLEGE SYSTEM DURING THE FIRST FIVE YEARS AFTER THE IMPLEMENTATION OF PERFORMANCE FUNDING

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Semester of Graduation: Fall 2002

This study extended the use of six statistical measures of funding distribution equity commonly used in public school finance to community colleges in Florida. The results indicate that such measures can be used reliably in a community college setting. These findings have national implications.

The study used the statistical measures to assess the influence performance funding had on the equitable distribution of total operating funds to the 28 colleges in the Florida community college system during the first five years after the implementation of performance funding. The study found that performance funds were distributed in a less equitable manner than the non-performance-based funds during the period studied. The results have particular implications for policymakers in Florida, and can be generalized to other states as well.